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How to make construction

# S.Af.E.R.?

More than 20 industry stalwarts share best practices and future trends that will help achieve this.

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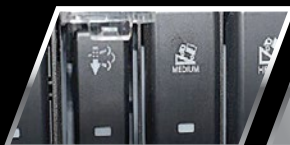


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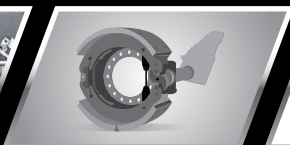


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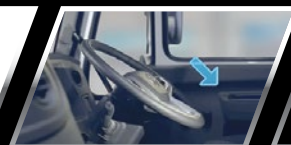
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**For Subscription**  
Sub@EquipmentIndia.com  
Tel: 022-24193000

**Published by**  
ASAPP Info Global Services Pvt Ltd,  
A-303, Navbharat Estates, Zakaria Bunder Road,  
Sewri (West), Mumbai-400 015.  
Tel: 022-24193000. Fax: 022-2417 5734.

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Printed and Published by Tarun Pal on Behalf of ASAPP Info Global Services Pvt Ltd, printed at Indigo Press (India) Pvt Ltd, Plot No 1C/716, Off Dadaji Konddeo Cross Road, Between Sussex and Retiwalla Ind. Estate, Byculla (East), Mumbai-400 027, and Published from A-303, Navbharat Estates, Zakaria Bunder Road, Sewri (West), Mumbai-400 015. Editor: Pratap Vijay Padode

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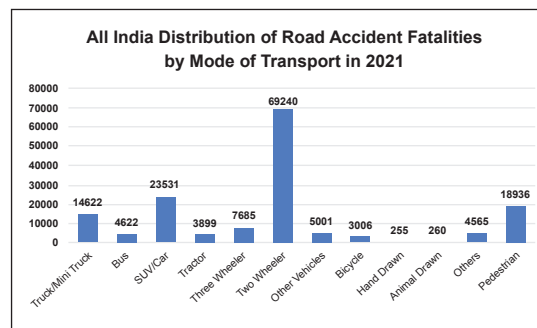
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## THE TIGHTROPE WALK TO SUSTAINABILITY

There were 4,03,116 road accidents that occurred in India in 2021. These accidents caused 1,55,622 fatalities and left 3,71,884 people injured. Of these fatalities, the type of vehicle most in use were two-wheelers which accounted for close to 45 per cent of the fatalities, followed by SUVs/cars at 15 per cent and pedestrians at 12 per cent. So, whenever we discuss the poor safety record on Indian roads, we need to be clear that the major contributors are the two-wheelers. But that's not the reason we are calling our 15<sup>th</sup> Anniversary issue of EQUIPMENT INDIA 'S.Af.E.R.' S.Af.E.R. will focus on - S: Sustainability; Af: Alternative fuel; E: Electrification; and R: Rental.



In India, although the transport sector accounts for less than a fifth of India's final energy use and almost 11 per cent of India's energy sector-related carbon dioxide emissions, its emissions are growing at a faster rate compared to other sectors.



The S.Af.E.R. theme is based on the notion that integrating energy-efficient equipment and energy-saving technology in sustainable development initiatives can dramatically cut energy use and harmful emissions. In the long run, pollution-free machinery benefits the environment and adds value through lower operating costs. The market for renting out equipment is anticipated to grow along with rising government investment in infrastructure projects. Even electrifying construction equipment is moving forward quickly.

Businesses are stepping up their efforts to become more environmentally responsible as global warming becomes the new buzzword and climate change issues raise significant concern among people around the world, the construction equipment industry isn't far behind in this journey.

Construction equipment is one of the leading contributors to diesel pollution. As a result, several manufacturers are moving quickly to make their products "green". This entails updating equipment to assure lower emissions of dangerous gases, such as carbon dioxide. Diesel oxidation catalysts are used in such sophisticated equipment to cut emissions.

One of the main substitutes is biodiesel, and there are other blends with different ratios on the market. Besides from issues with OEM approval and warranty-related issues, the industry is very hesitant to employ them on construction equipment due to a lack of clarity regarding their consistency and purity.

Even Union Road Transport and Highways Minister Nitin Gadkari, during the inauguration of bauma CONEXPO event in Noida, urged construction equipment manufacturers to make equipment that runs on





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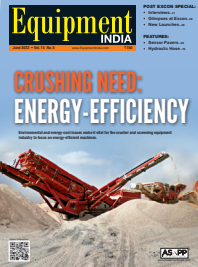
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alternative fuel instead of diesel to curb air pollution. Gadkari has always been vocal against diesel as a fuel and has been pushing for alternative fuels that are indigenous and clean. Many OEMs have launched hybrid versions of their construction equipment during the recently concluded bauma CONEXPO exhibition in Noida.

In order to ensure that biofuels are accessible, affordable, and available to end consumers, Komatsu India works closely with top oil companies to build a sustainable energy grid. Additionally, Komatsu Oil Wear Analysis (KOWA) backs the company's concerted efforts to evaluate the quality of biofuel and advise users to utilise it. In spite of these advantages, using biodiesel in construction equipment still has significant drawbacks. For instance, some businesses may find it difficult to transition because biodiesel might be more expensive than conventional fuel. Also, certain questions have been raised regarding how well biodiesel performs in different engine and weather situations, which may affect how well it performs under challenging circumstances.

While progressing towards inexpensive alternative fuels, manufacturers are also pushing for electricity-powered machines. Zero harmful emissions, a futuristic design, minimal operating costs, and cutting-edge technology are all features of electric vehicles. Several electric equipment models are on display around the world with artificial intelligence for increased safety and effectiveness. These electric devices will significantly lower operating costs and the requirement for routine maintenance, reducing downtime and increasing productivity.

Electric construction equipment has several benefits, but there are also some issues that need to be resolved. Battery-powered tools may be less appropriate for large-scale building projects that call for the usage of machinery over long distances due to their restricted range. At bauma, Volvo CE unveiled the EC55 electric compact excavator and SDLG L956HEV electric wheel loader for the first time in India. This is just the beginning of a series of products from Volvo CE that will change the face of construction in India.

Construction equipment rental businesses are anticipated to benefit from the government's increased attention on infrastructure projects such as metro projects, railroads, airports, motorways, bullet trains, housing for all, and rural roads. The rental business in the construction equipment segment is quite dynamic and with the renewed focus of the government on infrastructure, the future looks bright. In 2022, the market for construction equipment has essentially held steady.

However, with the recent thrust on railways, roads, and urban development, the pace of construction is likely to accelerate during the current year as the Govt has planned to race toward the 2024 elections with a giant showcase of development plans underway. Railways have got an outlay of Rs 2.4 trillion and roads have received an enhanced outlay of 35 per cent taking it to Rs 2.7 trillion. The budget has also allocated Rs 350 billion for priority capital investments toward energy transition and net-zero objectives. How the government will balance the twin objectives of growth and carbon emissions will remain a tightrope walk for now.

The issue you are holding has great value as more than 20 industry bigwigs have discussed future trends and best practices that will contribute to our theme – S.A.f.E.R.

Enjoy reading!

*Pratap Padode*

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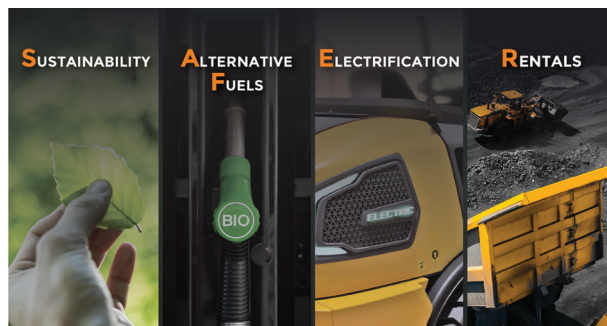




# CONTENTS

## COVER STORY: S.Af.E.R.

### HOW TO MAKE CONSTRUCTION S.Af.E.R? 44



The underlying premise of the theme is that integrating energy-efficient equipment and energy-saving technology in sustainable development initiatives can drastically cut energy use and harmful emissions.

### INCHING TOWARDS \$5 TRILLION ECONOMY

50



**SP Rajan**  
Head – Plant & Machinery,  
Larsen & Toubro

### BRINGING SUSTAINABILITY TO THE FORE

52



**Deepak Shetty**  
CEO and Managing Director,  
JCB India

### MUCH BETTER TO BE SAFER THAN SORRY

56



**Dimitrov Krishnan**  
Managing Director,  
Volvo CE India

### TOWARDS A SUSTAINABLE FUTURE

58



**Sandeep Singh**  
Managing Director,  
Tata Hitachi Construction  
Machinery



**REDUCE, REUSE, AND  
RECYCLE!**  
**Piero Guizzetti**  
CEO,  
MB Crusher India

60

### SUSTAINABILITY AT THE FOREFRONT

62



**Anand Sundaresan**  
Managing Director India and  
Executive Vice President,  
Ammann India

### IMPROVING CONSTRUCTION PRODUCTIVITY

64



**Nischal Mehrotra**  
Vice President -  
Sales & Marketing,  
Liugong India



**FOCUS ON SUSTAINABLE  
ROAD CONSTRUCTION** 66  
**Ramesh Palagiri**  
Managing Director and CEO,  
Wirtgen India

### COMMITTED TO A FUTURE OF SUSTAINABLE GROWTH

86

Komatsu India is targeting to be carbon-neutral by 2050.



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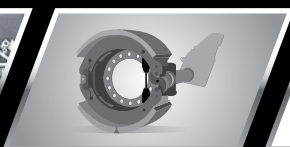


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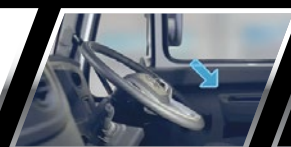
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# CONTENTS

## PAVING THE WAY FOR SAFER FUTURE 68



**Dheeraj Panda**  
COO (Sales, Marketing  
and Customer Support),  
Sany Heavy Industry India

## THE FUTURE IS ELECTRIC! 70



**Amit Randive**  
Business Development Manager,  
Epiroc Mining India

## INNOVATION TO ACHIEVE EXCELLENCE 72



**Sorab Agarwal**  
Executive Director,  
Action Construction  
Equipment

## ELECTRIC CONSTRUCTION MACHINERY ON THE RISE 74



**Ashok P Chhajer**  
Sr. General Manager – OE  
Sales, (Domestic Market),  
Balkrishna Industries

## TOWARDS A GREENER FUTURE 76



**Rajesh Nath**  
Managing Director,  
VDM India

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## THE RISE OF AUTOMATION IN CE INDUSTRY 78



**Puneet Vidyarthi**  
Head – Marketing and Business  
Development - India & SAARC,  
CASE Construction Equipment

## RENTAL INDUSTRY PREPARING FOR A BRIGHT FUTURE 80



**Mukesh Sharma**  
Country Manager,  
Atlas Copco Specialty Rental

## PROGRESSIVE OUTLOOK FOR THE INDIAN CE INDUSTRY 82



**Sameer Malhotra**  
CEO,  
Shriram Automall

## INFRA DEMAND BOOSTING RENTAL MARKET 84



**Satin Sachdeva**  
Founder and Secretary General,  
Construction Equipment  
Rental Association (CERA)

## NEED FOR SUSTAINABLE SOLUTIONS 92



**Jaideep Shekhar**  
Managing Director,  
Terex India



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## ORGANISATION

Action Construction Equipment.....	40
Ammann India .....	62
Atlas Copco India.....	80
Balkrishna Industries.....	36, 74
BKT Tires.....	36, 74
Bridgestone India.....	18
CASE Construction.....	78
Caterpillar Inc.....	32
CNH Industrial .....	29
Construction Equipment Rental Association.....	84
Cummins India .....	24
Epiroc Mining.....	70
Equipment Planet.....	84
Escorts Kubota.....	24
ExxonMobil .....	22
IFM .....	98
JCB India .....	52
JK Tyre .....	42
Kennametal India .....	20
Komatsu .....	28, 34
L&T Construction.....	50

L&T Construction Machinery.....	34
Liebherr .....	28
LiuGong India .....	22, 64
MB Crusher India.....	60
Pandit Cranes Services .....	100
Sany Bharat .....	32
Sany Heavy Industry .....	68
Schwing Stetter India.....	40
Shriram Automall .....	18, 82
SDLG India.....	36
Tata Hitachi Construction Machinery.....	20, 58
Terex India.....	34
VDMA India .....	76
VE Commercial Vehicles .....	18
Volvo CE India.....	56
Volvo Group .....	36
Wirtgen India .....	66
Yanmar Compact Equipment North America.....	29

## PEOPLE

Amit Randive .....	70
Anand Sundaresan.....	62
Andrew Curtis .....	24

Anuj Kathuria .....	42
Ashok P Chajjer.....	74
Avadesh Sharma.....	100
Deepak Garg .....	32
Deepak Shetty.....	52
Dheeraj Panda.....	68
Dimitrov Krishnan.....	56
Jose Samperio.....	24
Mukesh Sharma.....	80
Nishcal Mehrotra .....	22, 64
Nitin Gadkari.....	40
Piero Guizzetti .....	60
Puneet Vidyarthi.....	78
Rajesh Nath.....	76
Ramesh Palagiri .....	66
Rohit Reddy .....	20
Sameer Malhotra .....	18, 82
Sandeep Singh.....	20, 58
Satin Sachdeva .....	84
Scott Wine .....	29
SP Rajan.....	50
Stefano Sanchini.....	18
Vipin Rana.....	22

## Equipment INDIA

## DID YOU MISS THESE STORIES ?

### LIUGONG FORAYS INTO MINING SEGMENT



Liugong forays into mining segment  
by Anuj Kathuria

Leading global & leading manufacturer of construction and heavy machinery announced to foray into the mining segment at launch of D600D wheel loader in Greater India.

**SCAN TO READ**



### ATLAS COPCO CELEBRATES 150 YEARS OF INNOVATION



Atlas Copco celebrates 150 years of innovation  
by Anuj Kathuria

Atlas Copco, founded in Sweden in 1873, today celebrates its 150th anniversary. During a century, the company has grown to be a global leader in compressed air and vacuum technology, and a pioneer in many different markets.

**SCAN TO READ**



### ACE UNVEILS INDIA'S FIRST ELECTRIC MOBILE CRANE



ACE unveils India's first electric mobile crane  
by Anuj Kathuria

India's first indigenous developed fully electric mobile crane has been launched by ACE at launch event in Delhi. The electric crane is a 10-tonne capacity crane with a lifting capacity of 10 tonnes, a 30m reach and a 360-degree rotation.

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### SUSTAINABILITY AND AUTOMATION WILL BE OUR FOCUS AREAS



Sustainability and automation will be our focus areas  
by Anuj Kathuria

India's first indigenous developed fully electric mobile crane has been launched by ACE at launch event in Delhi. The electric crane is a 10-tonne capacity crane with a lifting capacity of 10 tonnes, a 30m reach and a 360-degree rotation.

**SCAN TO READ**



### OUR PRODUCTS HAVE A VERY PROMISING MARKET IN INDIA



Our products have a very promising market in India  
by Anuj Kathuria

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providing all the facilities to its employees even during the nationwide lockdowns. SAMIL understands the psychological needs of its employees and thus introduced many ways of keeping them engaged and staying stress-free with activities, games, quizzes, and more. Important sessions from various SMEs on workplace, lifestyle, health and awareness have helped the employees to learn and grow at a faster pace.



**Sameer Malhotra, CEO, SAMIL**

## Bridgestone India earmarks over ₹600 cr investment for expansion

Bridgestone India, part of Bridgestone Corporation, announced that it would be investing over ₹600 crore to meet the increasing demand for quality passenger tyres in the country. The investment will not only upgrade technology but also increase capacity at its Chakan plant in Pune. The said investment will be spread over a period of three years.



"Bridgestone India is bringing in its global technologies and manufacturing for the Indian market so as to suit the needs of aspiring Indian consumers that want more fuel-efficient tyres, and better products to suit the improved quality of Indian roads. As a global leader in tyre technology, Bridgestone is committed to providing sustainable mobility solutions and the current investment of 70 million euros is in this direction" said Stefano Sanchini, Managing Director of Bridgestone India.

## VECV sells 7181 units in Jan 2023

VE Commercial Vehicles recorded sales of 7,181 units in January 2023 as compared to 5,434 units in January 2022 recording a growth of 32.1 per cent. This includes 6,992 units of the Eicher brand and 189 units of the Volvo brand.

Following are the key highlights for January 2023:

- Eicher branded trucks and buses have recorded sales of 6,992 units in January 2023 as compared to 5,325 units in January 2022 representing a growth of 31.3 per cent.
- In the domestic CV market, Eicher branded trucks and buses have recorded sales of 6,791 units in January 2023 as compared to 4,523 units in January 2022, representing a growth of 50.1 per cent.
- On the Exports front, Eicher branded trucks and buses have recorded sales of 201 units in January 2023 as compared to 802 units in January 2022, representing a decline of 74.9 per cent.
- Volvo Trucks and Volvo Buses have recorded sales of 189 units in January 2023 as compared to 109 units in January 2022, representing a growth of 73.4 per cent.

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## Innovative earthworks solutions from Kennametal

Kennametal India (KIL) has a range of innovative foundation drilling, road rehabilitation, mining, and wear protection solutions, which help customers solve their everyday challenges above and below ground.

Commenting on these solutions, Rohit Reddy, Deputy General Manager, Earthworks Business, KIL, said, "With India witnessing an uptick in infrastructure development, our customers demand higher productivity and performance from their equipment in order to support the nation's rapid development needs. KIL's offerings in road rehabilitation and mining are developed to perform in the toughest conditions and deliver optimum efficiency. We look forward to partnering with customers for transforming how everyday life is built."

In the foundation drilling category, KIL's premium 38/30 mm shank series conical tools and concomitant holders for hydraulic rigs and wall cutters, as well as the KF Series quick change flat cutters, weld-on teeth and flat teeth with TC buttons, etc. are known for maximising productivity and

boosting overall performance. KIL has also developed a 25 mm shank conical tool and holder along with a new 'core barrel ring' designed by in-house experts as per customers' customisation requirements.

These leading-edge cutting solutions for foundation drilling applications keep high-value equipment running longer and performing better in demanding environments, while continually

providing new and innovative solutions.

In the road rehabilitation category, KIL recently launched next-gen Road King

tool series that provides superior milling machine performance. Its new design elements maximise tool life and make tooth changes easy and efficient for operators. The new RK31, RK32 and RK54 feature new design improvements like improved body, washer and retainer design for optimum carbide tip usage, better rotation and reduced axial play, which further improves holder protection as well as retention in the current generation of tool holders.

KIL's block system, which features a taper locking sleeve and the new CB22 'Stack-on System' that converts an OEM's bolt-on system to a taper sleeve system.



## Tata Hitachi displays powerful hydraulic excavators at STONA 2023

Tata Hitachi, in collaboration with Hitachi Construction Machinery, Japan, has been a pioneer in introducing the latest technologies in the Indian market. The company is participating in STONA 2023, and displaying its tough and powerful hydraulic excavator models ZX 220LC and ZX 370LCH. Both machines are well-established and popular in granite and stone quarry applications. The ZX 370LCH displayed comes with a new improved ultra-HD undercarriage and block handling bucket. This makes the machine ideal for uninterrupted operations in tough rocky conditions and uneven terrains.

Speaking at the Tata Hitachi pavilion, Sandeep Singh, Managing Director says "STONA 2023 is one of the most prominent exhibitions in the stone sector and a platform to connect with all relevant stakeholders. Today, Tata Hitachi is proud to showcase two of the most reliable and powerful machines that are suitable for granite, marble, and stone quarry applications."

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## Mobil launches 50% post-consumer recycled plastic pails in India

Mobil, a global leader in lubrication technology innovation, has launched an initiative to encourage sustainable packaging with its 50 per cent post-consumer recycled (PCR) plastic pails. The PCR pails drive the use of recycled plastic, helping reduce plastic waste, and enabling sustainable progress. The company's 50 per cent PCR pails, first in pails packing for lubricating oils in India, aim to help customers reduce waste, convert waste to value and advance sustainability ambitions.

Vipin Rana, Chief Executive Officer, ExxonMobil Lubricants, said, "Mobil can help create value by advancing customers' mobility, productivity, and sustainability ambitions. Our initiative to transition to 50 per cent post-consumer recycled

plastic pails is just one example of how we are advancing our customers' sustainability ambitions. We understand the ever-changing needs of our customers and stakeholders and are committed to operating our business in an accountable and sustainable manner, supplying feature products by minimising the environmental impacts, and supporting the communities in which we operate."

ExxonMobil has emerged as a categorical leader in the diversion of waste in lubricant facilities. All Mobil products manufactured in the company's global network of lubricant facilities carry the Underwriters Laboratories Zero Waste to Landfill, Silver Validation, first earned in 2018. This validation recognises



ExxonMobil's commitment to reducing waste and advancing a circular economy. Additionally, ExxonMobil continues to be the first and only finished lubricants marketer to carry this credential, and each year diverts more than 90 per cent (over 50,000 tonnes) of lubricant operations waste from landfills into new productive uses.

## Liugong forays into mining segment

Liugong India, a leading manufacturer of construction and heavy machinery, announced its foray into the mining segment. The new launches consist of large excavators viz. 965Exd, 975Exd, dump truck (DW 105A), hydrostatic wheel loader (886HST), motor grader (4215D) and dozer (LD20). These machines are designed for arduous and tough Indian operating conditions in the most demanding of applications. They are capable to perform large-scale earthwork applications, quarries, and mining applications.

Liugong India Vice President (Sales & Marketing), Nischal Mehrotra said, "India is going to be a growth driver for the world in the coming decades, and much of this growth will come from Infrastructure development in the country. There are projects of significant National Importance that are gaining encouraging momentum across the country. Large-scale infrastructure development will require larger and more productive machines, and this new range of equipment addresses that need. Projects such as Bharatmala, Sagarmala, new Ports

and logistic hubs will future create greater opportunities." The 975EXD is a 75 t machine and has a 5.6 m<sup>3</sup> bucket. The machine is powered by a Cummins 524 hp, 2373 Nm torque engine with an electronically controlled direct injection system. The 965EXD is a 62.6 tonne machine and has a 4.1 m<sup>3</sup> bucket. The machine is powered by a Scania 444 hp, 2007 Nm torque engine with an electronically controlled direct injection system. The DW105A has a gross horsepower of 480 kW, 552 HP at 1900 rpm and a payload capacity of 70 t.

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## NEW CHAMPION IN MID-MINING SEGMENT

Komatsu India Private Limited introduces first of its kind, the new champion **PC500LC-10R** in mid-mining segment for the Indian market. This versatile machine is specially designed for deployment in multiple applications with excellent adaptability and to provide consistent performance over long hours. The machine works exceedingly well for overburden removal in mines, providing the lowest cost per cubic meter.



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## Cummins replaces 2 legacy engines with new X10 powertrain

Cummins Inc. will retire its L9 and X12 legacy engines, replacing them with a new X10 engine capable of powering medium- and heavy-duty trucks on a variety of fuels. The move is consistent with Cummins' plan to offer its X15 engine family powered by natural gas, hydrogen, propane and possibly other combustible fuels as an interim solution along with zero-emission battery- and fuel cell-electric powertrains.

The fuel-agnostic engine platforms feature a series of engine versions derived from a common base engine. Below the head gasket, each engine has

similar components. Components above the head gasket contain components for different fuel types. Each engine runs on one fuel.

The 10-litre displacement product slots between the B6.7 for vocational, transit, pickup and delivery and regional haul customers and the X15 focused on long-haul trucking. The X10 will start as a diesel engine and add other gaseous fuels, including B20 and renewable diesel. Cummins plans to offer the X15N powered by natural gas in 2024 and the X15H with hydrogen combustion in 2027.

"We are committed to advancing diesel technology while our markets and our customers need it to run their businesses," José Samperio, Cummins executive director of the North America On-Highway business.

The new X10 diesel will emit 75 per cent less nitrogen oxide emissions than current engines and comply with the U.S. Environmental Protection Agency 2027 regulations. The X10 architecture uses a belt-driven, high-output 48-volt alternator. An aftertreatment heater is scalable to other advanced combustion technologies such as cylinder deactivation.

## Andrew Curtis joins Perkins as Customer Solutions Director

Perkins Engines Company is pleased to announce that Andrew (Andy) Curtis has been appointed to a new role as Customer Solutions Director. This newly-established position will see Andy continue to focus on building relationships with key original equipment manufacturers (OEMs) around the world and supporting them through the energy transition to a lower-carbon future.

Throughout his career, Andy has exhibited a strong focus on customer collaboration.

Most recently, Andy was OEM sales director, where he led the global OEM team through a successful EU Stage V introduction, as well as owning Perkins'




Andrew Curtis

Agricultural and Material Handling strategies.

"I'm thrilled to be taking on the challenge of this new role and growing a team of experienced professionals who are focused on working with customers to deliver the right solutions for the future," said Andy.

## Escorts Kubota's Q3 standalone profit doubled to ₹186.4 cr

Escorts Kubota reported a net profit of ₹186.4 crore in quarter ended December 31, 2022, as against a profit of ₹201.5 crore in the corresponding quarter of the previous fiscal and as against ₹87.7 crore after exceptional item in sequential quarter, adversely impacted due to unabsorbed inflation and adverse product mix.

Construction equipment sales volume at 1,209 machines in the quarter that ended December 2022 went up by 5 per cent as against 1,151 machines in the corresponding period last fiscal. Segment revenues went up by 10.7 per cent at ₹306.1 crore in the quarter ending December 2022. 

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## Komatsu sales jump 28% in third quarter

Despite supply chain disruptions and increases in material prices and logistic costs, Komatsu saw net sales and operating income reach record highs on new equipment, parts and services in the first nine months of the current fiscal year, which ends March 31, 2023.

The Japan-based company cited increased selling prices and a weaker yen for the increase. However, as the yen appreciates more than expected, the outlook for construction equipment demand is becoming increasingly uncertain in Europe and the US.

For construction, mining and utility equipment, Komatsu sales increased by 28.4 per cent year-on-year to 2,363.2



billion yen. Sales were up in all regions, except for the Commonwealth of Independent States (CIS), which includes Russia, Ukraine and former USSR-member countries, and China. The company said there were particularly sharp sales increases in North America, Asia and Latin America. According to company officials, sales increased mainly due to

the positive effect of foreign exchange rates, increased volume and improved selling prices.

Takeshi Horikoshi, chief financial officer, said that in the third quarter, sales volume was actually a little lower than expected. "This is not about demand. It's more about the supply chain, which had an impact, especially in North America, Japan, and Komatsu Mining Corporation," he said. "Volume was lower than expected, especially for original equipment. Therefore, in terms of sales volume, we underperformed. But foreign exchange gains helped, and part sales overachieved, meaning that there was a product mix gain."

## Liebherr to showcase 30 exhibits from 7 categories at Conexpo

Liebherr exhibits at Conexpo 2023 from March 14-18 offer visitors the unique opportunity to discover the latest developments from the areas of construction machines, cranes, material handling technology and components. "On your site," is the motto at this year's Conexpo. It represents Liebherr's promise to be at the customers' side around the world at all times – whether it is directly on the construction site with high-quality machines or through individual advice, global services and comprehensive solutions.

The Liebherr booths at Conexpo 2023 offer space for more than 30 exhibits on a total exhibition area of almost 60,500 ft<sup>2</sup> (~ 5,600 m<sup>2</sup>) (Festival Grounds, booth F9253). The area was enlarged by approximately 7,200 ft<sup>2</sup> (~ 670 m<sup>2</sup>) due to the addition of a demo area, where Liebherr will show its machines in action for the first time at Conexpo. Numerous new products and developments from the areas of construction machines, cranes and material handling technology are on display. In addition, Liebherr presents



the latest innovations from its component's product segment in the South Hall (booth S80821).

The TA 230 Litronic from the new generation of articulated dump trucks, has been redeveloped from scratch not only featuring a new design. The machine was unveiled to the U.S. market during Liebherr USA, Co's Customer Day event in May 2022.

### FORM IV (RULES) STATEMENT BY THE PUBLISHER

(Statement about ownership and other particulars about the newspaper to be published in the first issue every year after the last day of February.)

Registered name of Publication: Equipment India; Place of Publication: Mumbai (Maharashtra); Periodicity of publication: Monthly; Printer & Publisher: Tarun Pal; Address: A-303, Navbharat Estates, Zakaria Bunder Road, Sewri (W), Mumbai - 400 015. Nationality: Citizen of India; Editor: Pratap V. Padode; Address: A-303, Navbharat Estates, Zakaria Bunder Road, Sewri (W), Mumbai - 400 015. Nationality: Citizen of India; Owner addresses of individuals who own the Newspaper or Partner or Shareholders holding more than one percent of the total capital: Mr Pratap V. Padode; Mrs Falguni P. Padode. Gayatri Financial Services Pvt Ltd; First Infocenter Pvt Ltd, A-303, Navbharat Estates, Zakaria Bunder Road, Sewri (W), Mumbai - 400 015.

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## Yanmar announces expansion at Minnesota plant

Yanmar Compact Equipment North America, which encompasses the Yanmar Compact Equipment and ASV brands, has announced plans for a 32,000-square-foot expansion to its Grand Rapids, Minnesota facility. The company expects to break ground in the spring, with a target for completion in 2024.

“We received a lot of support through the investment of Yanmar Co. Ltd. and several city, county and state grants and loans to help make this expansion happen,” said Tate Johnson, president of Yanmar CE NA. “The expansion will improve efficiency, allowing us to better serve our customers as we continue to grow

as a leader in compact equipment.”

The expansion will include a relocation of the paint system to increase paint capacity up to three times with automation and allow parts manufacturing capacity to increase by up to two times in the previously occupied space.

According to Johnson, the new paint system will be more efficient, have less environmental impact and convert a liquid paint process to a powder-coating system for a higher production rate. Relocating the paint system will allow the space previously occupied to be outfitted with robotic weld cells and cutting tables.

In addition, the project sets the



stage for future capacity increases, with company officials projecting the addition of hundreds of full-time positions over the next five years.

Over the last three years, Yanmar CE NA has increased its staff by 35 per cent and boosted quality assurance by adding new positions, tracking key metrics and implementing global quality best practices, the company says.

## CNH Industrial maintains record sales pace in rough economy

Driven by higher volumes in South America and despite challenges with higher freight and raw materials costs, sales for construction and agricultural equipment manufacturer CNH Industrial increased year-over-year in 2022 by 21 per cent to \$21.5 billion.

CEO Scott Wine said the company’s construction division saw a 2022 Q4 increase of 16 per cent to \$983 million with strong momentum from the Sampoerana integration, manufacturing improvements and enhanced customer focus.

The company’s portfolio of construction equipment is sold under three brands: Case Construction Equipment, New Holland Construction, and most recently, Eurocomach, part of the portfolio acquired with Sampoerana.

He noted that sales for the year were also up 16 per cent within the construction division with noteworthy growth in Europe and South America.

“Organic growth accounted for about two-thirds of the increase with the remainder attributed to

Sampoerana,” Wine said. “Their excavator portfolio and technology innovations have enhanced our ability to meet customer needs, and their Eurocomach platforms provide an outstanding foundation for electrification.”

In the third quarter, CNH started selling Sampoerana compact excavators in Europe under the Case and New Holland brands, opening a new assembly line to increase the capacity for those products, which it will begin exporting to other regions in 2023.

### Takeuchi releases TB20e electric excavator


Takeuchi’s TB20e battery-powered compact excavator will soon be available for sale or rent at qualified Takeuchi dealer locations throughout North America.

Before making the

machine available to dealers, the TB20e underwent a year of customer feedback and testing through a pilot program Takeuchi conducted with United Rentals. Dealers must complete a training program through Takeuchi to sell and service the machine, says National

Marketing Manager Stephen Odum.

“The TB20e is an example of Takeuchi’s enduring legacy of innovation in the compact equipment market,” said David Caldwell, national product manager for Takeuchi-US. “We’re committed to environmental stewardship,

and this new battery-powered excavator is designed to help our customers meet their own sustainability goals without sacrificing the performance and reliability they deserve and expect from Takeuchi.” Similar in performance to Takeuchi’s diesel-powered TB216 compact excavator, TB20e is powered by lithium-ion battery. 





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## Sany Bharat forays into asphalt business

Sany Bharat launched its asphalt business at bauma CONEXPO 2023, moving ahead with their plan of helping the government build a “Naya Bharat”. The asphalt range of machines was unveiled at this expo, which witnessed a footfall of over 50,000 visitors during the four-day event. With the government making large-scale investment plans for road network development, Sany’s asphalt machine range with powerful engines and reliable components is poised to be the ideal solution in various work environments/road construction. Sany Bharat has established a large network for after-sales support for their existing products, the brand plans to leverage this strength for the asphalt business line too. The newly launched machines are now available for end customers in the road construction industry in India and South Asia.

Speaking on the occasion, Deepak Garg, Managing Director, Sany Bharat and South Asia, said, “We are delighted to introduce our best-in-class asphalt machines for the very first time in India. These machines are designed in such a way that it gives maximum output with the optimum cost of operation. We believe this outstanding feature will be a key USP to staying ahead in this market. As per Sany Group’s vision, the quality of the machines will continue to reign supreme coupled with never-before-seen features that will ensure high productivity and ROI for our customers.”

Sany road machinery portfolios include five product categories: asphalt pavers, asphalt mixing plants, motor graders, and road milling machines. Their road construction equipment is widely used in the construction of



highways, state and city roads, rural roads, and airports.

This new vertical will be seen as a significant step to capturing new markets and expanding customer bases the construction equipment market is gaining prominence rapidly. Sany Bharat has also set up a toll-free number 18002093337 for all queries related to sales and services.

## Caterpillar’s digital-enabled solutions

Caterpillar Inc., the world’s largest manufacturer of construction and mining equipment, showcased its world-class products equipped with advanced technology and digital-enabled service solutions at bauma CONEXPO INDIA.

From connected assets to online parts ordering, data analytics to automation, the Caterpillar exhibit featured a technology ecosystem to help customers get the most from their machines. Customer Value Agreements (CVAs) and other financial solutions enable big as well as small customers to run their business hassle-free. Attendees also learnt about remanufacturing and rebuild options to transform their used machines, and bring new life to assets with a like-new performance at a fraction of the cost of a new machine, while supporting a circular economy and helping our

customers build a better, more sustainable world.

With the right tool for the right job, Caterpillar develops customised solutions for the growing needs of India’s infrastructure industry. The exhibit featured a wide range of products including hydraulic excavators, wheel loaders, backhoe loaders, skid steer loaders, attachments and generator sets from Cat®, SEM, Hindustan and FG Wilson brands.

Advanced Technologies: At the exhibit, attendees saw how Caterpillar is leveraging technology and innovation to improve the productivity and sustainability of products, services and solutions for its customers, including: Cat Product Link™, along with GPS connect, help improve traceability and visibility while also enabling the systems to observe, identify and understand different



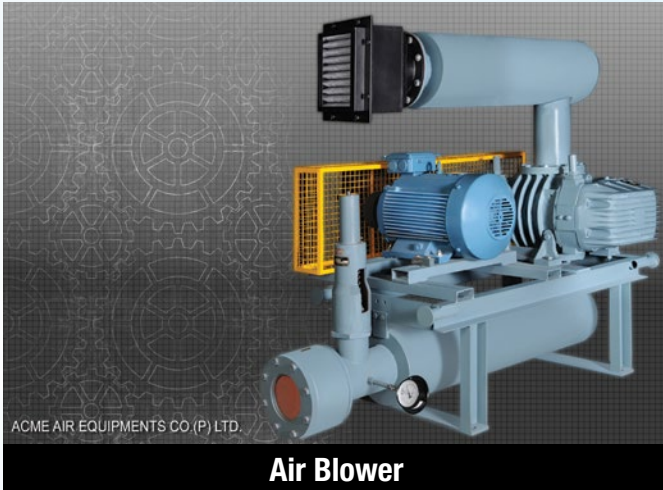
facets of heavy machinery operation without human intervention.

Cat Grade with Assist for excavators uses machine position sensors and operator-defined depth and slope parameters to automate boom and stick movements for more accurate cuts with less effort to help increase operator efficiency.

Cat Motor Grader equipped with AccuGrade Grade Control System enhances grading accuracy and virtually eliminates the need for survey stakes.



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## Komatsu and L&T showcase hybrid excavator



Komatsu India, the 100 per cent subsidiary of the global construction and mining giant Komatsu and Larsen & Toubro, India's largest engineering company, put together an impressive display at bauma CONEXPO India 2023. The participation covered a large outdoor area with a constructed stall and a comprehensive display of 15 machines, genuine parts and special attachments. For the first time, Komatsu had on display the

HB365LC-1 hybrid excavator, which is at least 20 per cent more energy efficient and helps reduce carbon emissions compared to conventional equipment.

The PC300LC-8 hydraulic excavator fitted with a parallel cabin and orange peel grapple is ideally suited for scrap handling which is expected to grow multifold with the new automobile scrapping policy.

Other products on display included Komatsu's PC210-10MO super long front, PC205-10M0 hydraulic excavator 'the EarthMaster' and newly introduced PC500LC-10R hydraulic excavator developed for the mid-mining segment and the next-gen GD535-6 motor grader. These new models incorporate Komatsu's cutting-edge technology and have

been specially developed to suit tough Indian applications and conditions. The new high-performance hydraulic excavators have generated tremendous interest among buyers and have been lauded for introducing highly productive machines.

All these models are bio-diesel compatible and poised to bring about a behavioural change in customer-buying preference and contribute to the sustainability index of the nation. Komatsu is in discussions with oil companies to make biofuel available at project sites with easy access to end users.

L&T recently commissioned Komatsu's 100 tonne off-highway trucks for a steel company in Odisha that plans to operate the machines using bio-diesel.

## Spectacular showcase from Terex India

Terex India showcased eight of its latest products to cater to the crushing, screening, lifting, washing, and recycling industries and was delighted to couple this product launches with key handovers for almost all the products on display, where key customers were invited.

A key theme was Terex India's commitment to sustainability and making a positive impact to the environment through product innovation and environmental stewardship, such as electric and hybrid solutions. A key highlight was the launch of the state-of-the-art electric-driven Finlay 690i Hybrid Mobile Screen, in the presence of Shri Nitin Gadkari Minister of Road Transport & Highways, Government of India.

**Finlay 690i:** By providing customers with the flexibility to run the plant from an external power supply or a standard onboard engine,



the Finlay 690i mobile inclined screen has opened doors to low emission screening on multiple applications such as quarrying, mining, sand and gravel and recycling. Additionally, it has been specifically built to meet the needs of users with high output requirements.

**Terex MPS WJ3042i:** Built for high performance and aggressive use, the main USP of the wheeled jaw crusher comes with its miniature size, quick setup, ease of transport and simple maintenance. Manufactured to be used in a range of applications, the Terex MPS WJ3042i serves as an ideal

machine for quarrying, mining, demolition, and recycling. Being cost-effective due to simple maintenance, the equipment is designed for maximum productivity by incorporating a jaw crusher and heavy-duty vibrating grizzly feeder.

**Terex MPS MVP550X:** Crushing all that stands in its way, the newly launched Terex Cedarapids MVP550X is built to pulverise the toughest material that it meets. Manufactured with advanced engineering, the 500-horsepower machine will enable customers to experience enhanced features including high-speed clearing of jammed material and quick crusher separation capability for faster manganese changes. Being the best in the line of cone crushers, this product has revolutionised the industry with its hydro-pneumatic tramp iron relief system, high-flow manifold system and hydraulic-powered threaded upper assembly.





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## BKT launches EARTHMAX crusher haul & EARTHMAX SR 34

Balkrishna Industries (BKT), the Indian multinational company and global player in the off-highway tyre market, has launched two 'Made for India' tyres under the sub-brand EARTHMAX namely the EARTHMAX crusher haul and EARTHMAX SR 34, dedicated to the Indian construction and mining sector.

BKT - the 'Made in India' brand, continuously focuses on crafting unique mobility solutions for the OTR tyre industry worldwide. The tyres displayed at bauma CONEXPO India demonstrated the Indian multinational's attention to users' needs, trends, and the market proposing suitable and specific solutions for all operating conditions.

The EARTHMAX crusher haul is designed for on and off-road - quarry and haulage applications. This all-steel radial tyre has a block-type tread pattern that provides excellent traction.



The special compound ensures cut, chip, and wear resistance thus enhancing durability and mileage. The latest novelty by BKT, the EARTHMAX crusher haul is perfect for tippers in the industrial and construction segment and has been developed to suit longer haul with load due to the strong steel belt construction and casing.

Part of the same range, EARTHMAX SR 34 is an all-steel radial tyre designed for mining

applications. The 'non-directional block' tread pattern provides excellent traction and stability on any type of terrain. The strong all-steel casing features excellent wear and resistance to snags and punctures. The reinforced bead and shoulder design on EARTHMAX SR 34 contributes robust durability under heavy-duty service conditions. The latest novelty by BKT is ideal for wide-body mining trucks and can easily handle heavy loads.

## SDLG India showcases E6135Fi hydraulic excavator, L933H wheel loader



A Member of Volvo Group, SDLG India showcased SDLG machines at bauma CONEXPO at India Expo Centre recently. The two machines kept on display were the E6135Fi hydraulic excavator and L933H wheel loader. The machines are configured and manufactured keeping India-centric work conditions and customer needs in mind. Each one of them is a true value-for-money product promising

sustained returns on investment, in particular for road and retail segments.

The E6135i excavator is a 13-tonne machine designed and built for heavy lifting. It features a powerful four-cylinder DDE engine coupled with an energy-saving, load-sensing hydraulic system and delivers best-in-class performance. A genuinely versatile and stable machine, the E6135i excavator is ideally suited for a variety of urban and rural applications.

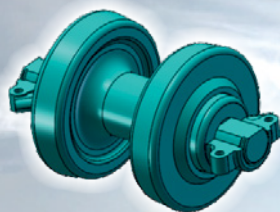
The L933H wheel loader is a feature-packed machine widely preferred at construction sites and aggregate plants, and for bulk material operations. It is powered by an advanced CEV-IV engine and a fully-hydraulic load-sensing steering system assuring remarkable flexibility and ease of operations. The engine is fitted with a diagnostic interface that,

along with a state-of-the-art instrument panel system, ensures smart checks and controls at every stage of operation.

Apart from the regular machines, they also showcased their capabilities on the futuristic technology and machines to meet the customer and environment needs towards Zero Carbon Emissions. The SDLG electric wheel loader L956HEV was introduced to the Indian market at this event. It comes powered with shock absorption technology, prolonging the life of lithium-ion batteries even in the harshest applications.

Surat Mehta, Head of SDLG Business in India, explained, "SDLG Growth Machines have captivated customers across India in the quarrying, mining, roads, railway siding, and port segments."

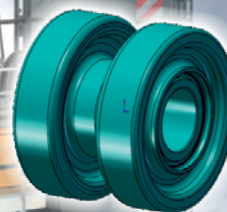




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## SCHWING Stetter launches 14 new products

Schwing Stetter India, one of the country's leading construction and concreting equipment manufacturer, unveiled 14 new products at the bauma CONEXPO India 2023. Shri Nitin Gadkari, Union Minister for Road Transport & Highways, launched one of the key products during the event.

The company aims to increase its growth by showcasing high-tech leadership in concreting and construction equipment manufacturing. During the four-day event, a range of new products was launched at the outdoor stall O/C20 in 57x40 sq. ft. space, including a Shotcrete pump (from R&D) - TSR 30.14 (EV), Cylinder Finisher - CF450 XXV, Belt Conveyor - 40m and more.

Speaking at the event, VG Sakthikumar, Managing Director, Schwing Stetter India, said, "This year marks a significant milestone for Schwing Stetter as we celebrate our



silver anniversary of 25 years in India. Therefore, we aim to launch a minimum of 25 new products this year that will impact the dynamics of the construction industry and stimulate infrastructure innovation in the country. We are pleased to share that today at Bauma CONEXPO India - we are launching the first 14 products that are built to improve the efficiency and competence the sector needs."

Currently, Schwing Stetter India has one of the strongest partners and collaborators for construction equipment in the country - with more than 28 dealers with XCMG machinery, 2500 employees, and 12 service centres. The company has doubled its revenue to Rs 4000 crore over the last two years and plans to grow further in 2023 with a focus on the domestic and export market.

## ACE unveils India's first electric mobile crane

India's first indigenously developed fully electric mobile crane has been launched by ACE at bauma CONEXPO 2023. The occasion was graced by Shri Nitin Gadkari, Minister of Road Transport and Highways of India, amongst a gathering of industry leaders, customers, business partners and company delegates to address the emerging needs and technology requirements with the backdrop of reducing carbon footprint of our customers. This launch marks India's first indigenously developed 100 per cent electric construction equipment and propels India on the global platform of technological advancements. ACE F150-ev 4X4 has been specifically designed to suit both road travel and pick-n-carry use. As part of the initiative to introduce sustainable technologies; the electric

crane has been specially designed to deliver optimum power and productivity while maintaining the versatility of the equipment for Indian conditions. With four-wheel drive and required traction, this electric crane is suitable for rough terrain operations and is equipped with unparalleled safety features with best-in-class durability and stability.

ACE F150-ev 4X4 is a zero-emission machine with lifting capacity of 15 tonne and the crane delivers best possible combination of green credentials, customer benefits and efficiency. Further, the company has also showcased India's biggest indigenously designed and developed crawler crane with a lifting capacity of 180 tonne. The crawler crane is equipped with anti-toppling features that provide enhanced safety on-site and



cutting-edge technology that makes it superior to conventional machines. The superstructure, boom and chassis of this crane have been made from high structural strength material for better endurance. The launch of this high-capacity indigenous crane marks the entry of our country into the high-tonnage domain and gives access to new markets with an opportunity to further deepen our presence both domestically as well as internationally.





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## Liugong displays electric wheel loader

Liugong India, a leading manufacturer of construction and heavy machinery, announced its foray into the electric wheel loader at bauma CONEXPO India, held in Greater Noida. Liugong has introduced a battery-powered wheel loader 856HEMax– delivering all the benefits of electric power and zero emissions without sacrificing performance. The 5.8 tonne payload capacity machine was unveiled by Shri Nitin Gadkari, Minister of Road Transport and Highways of India.

With this low-maintenance, battery-powered wheel loader, LiuGong continues to bring leading innovations to the construction equipment industry. Speaking on the launch Nischal Mehrotra, Vice President (Sales & Marketing) said. “Quiet and emissions-free, 856HEMax offers more solutions for today’s diverse job sites.”

856HEMax Features state-of-the-art, lithium-ion battery technology, the Liugong battery-powered wheel loader

offers equal to or greater performance than their diesel-powered equivalents. The battery systems deliver high-energy density, and long service life and require no routine maintenance. They provide about eight hours of continuous runtime and require just 70 minutes for a full charge.

With zero emissions, the machine supports environmentally sensitive worksites and allow users to operate where diesel exhaust is restricted. The excavators feature an electric power system that contributes to an exceptional operator experience with drastically reduced noise and vibration, which both operators and job site bystanders will appreciate. Because they are quiet, this wheel loader can be operated at all hours of the day, even in dense urban areas where noise can limit work hours.

The electric power needed to recharge the batteries costs a fraction of diesel, and these highly efficient wheel loaders are built with fewer parts and fluids, which significantly reduces



maintenance and repair costs, as well as work time lost to maintenance and repairs.??The battery management system protects lithium-ion batteries, extends battery life, and optimises power usage for highly efficient operations. This system monitors the batteries and will shut down the wheel loader to prevent damage to the batteries.

## JK Tyre launches 3 new tyres for OTR segment

Three new off-the-road tyres (OTR) have been introduced by JK Tyre, a renowned tyre producer, during Bauma CONEXPO 2023. The new products include 23X5.7-12 JET TRAX SUPER II 4PR TL, 26.5- 25 Loader Champ 28PR E4/L4 TL, and 23X8.50-12 JET TRAX ULTIMA 6PR TL.

The business claims to be the market leader in production for India’s largest tyre size, the 40.00-57, which has a 12-foot diameter and weighs over 3,400kg. The company offers a wide variety of durable goods to meet the many needs of industrial and mining use.

President of JK Tyre & Industries for India, Anuj Kathuria, stated: “JK Tyre has been in charge of introducing



a number of cutting-edge and technologically advanced products. Our commitment to innovation and to creating products that maximise performance and durability even on the most difficult Indian terrains is shown in our strong position in the off-the-road tyre market. We are confident that the three new tyres will further solidify our position in the OTR tyre market as “category-defining” ground-breaking products.

The 26.5-25 Loader Champ 28PR E4/L4 TL is a high-end heavy-duty product made for articulated dumpers and wheel loaders. It has a high-depth tyre with a specially created tread pattern that provides excellent grip, mileage, and cut resistance under demanding mining operating circumstances.

For the international markets, two new skid steer loader tyre varieties are planned: the 23X8.50-12 JET TRAX ULTIMA and the 23X5.7-12 JET TRAX SUPER II. They are intended for use in “non-highway services (NHS)” and other types of construction machinery. The tyres’ silica-based tread compound offers higher resistance to deterioration.





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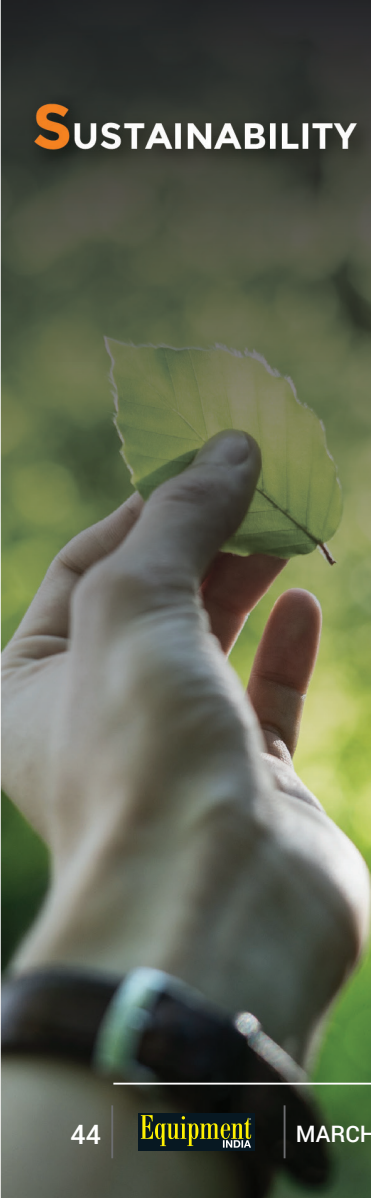
# How to make construction S.Af.E.R.?

The underlying premise of the theme is that integrating energy-efficient equipment and energy-saving technology in sustainable development initiatives can drastically cut energy use and harmful emissions.

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## SUSTAINABILITY



## ALTERNATIVE FUELS



## ELECTRIFICATION



## RENTALS







**T**he growth of the Indian construction equipment industry has been on an upswing, and this has been greatly propelled by the Government's focus on infrastructure development. As per Off-Highway Research forecasts, the Indian construction equipment market is expected to follow an upward trend in the next five years. The forecast is to grow by 11 per cent to 90,950 units in 2022 and a further 8 per cent to 98,550 units in 2023.

Many businesses are stepping up their efforts to become more environmentally responsible as global warming becomes the new buzzword and climate change issues raise significant concern worldwide. The construction equipment industry isn't far behind in this quest.

The S.Af.E.R. theme rides on the idea that improving equipment's energy efficiency and using energy-efficient technologies in sustainable development projects can significantly reduce energy consumption and harmful emissions. In the long run, pollution-compliant equipment is beneficial for the surroundings and adds value in terms of reduced operational costs. With increasing government spending on infrastructure projects, the equipment rental market is expected to rise too. Even, the electrification of construction machinery is making quick progress.

These trends are pushing the industry forward by inspiring manufacturers and contractors to seek innovative, cost-effective solutions to reduce their carbon footprint and minimise waste.

### Sustainability to the fore

Sustainability is a critical aspect of modern construction, with contractors searching for ways to reuse materials, recycle resources, and decrease waste. Sustainability is the key to a better future. Construction work is evolving as a result of green building. When people hear the terms "green building" or "sustainable construction", they frequently picture an energy-efficient, environmentally friendly building or infrastructure system. Building this "green" construction may entail utilising solar panels, automation technology, eco-friendly materials, and more.

Nonetheless, a building or infrastructure is only a small part of a green building. The first step in a sustainable building is to encourage the development and acceptance of



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new technologies and innovation on the construction site by contractors and operators. Using fewer natural resources on the construction site is the ultimate goal. To minimise environmental harm, technology is frequently needed when doing this. The equipment that is used in the field is arguably one of the major ways that the job site can go green.

The machinery used today is extremely connected. Construction businesses are able to monitor a variety of factors, including cycle segmentation, productivity, fuel usage, and machine health. Monitoring these variables can assist businesses in reducing their spending and energy usage.

As we grow, there is a need to consciously address the catastrophic environmental effects of various initiatives toward growth. Thus, sustainability has become the star prefix for everything we do today. As organisations are pledging more resources towards improving ESG footprints, they are keen to switch towards equipment with more focus on eco-friendly operation and maintenance.

The need of developing sustainable practises has been recognised by numerous industries, and as a result, it has become one of their main areas of concentration. Sustainability has been significantly influencing how the world will develop in the future. The producers of construction equipment are also making efforts to develop sustainable practises and introduce procedures that would aid the industry in moving towards a more sustainable future. Many businesses are developing new business plans to make e-mobility technology practical and cost-effectively available in India.

## Increasing use of alternative fuels

Biodiesel is one of the major

alternatives and many blends of various proportions are available in the market. Biodiesel is a clean-burning, renewable fuel that can offer numerous benefits to the construction equipment industry. In recent years, the demand for biofuels has increased as the world strives to reduce its carbon footprint and become more environmentally conscious. The construction equipment sector is no exception, and many companies are exploring the use of biodiesel in their equipment as a way to reduce emissions and lower their carbon footprint.

Moreover, biodiesel as a vehicle fuel can improve fuel lubricity, increase energy security and improve air quality. Biofuels in India are of strategic importance as they augur well with the government's ongoing initiatives, such as Make in India, Swachh Bharat Abhiyan, skill development, etc.

One of the main benefits of biodiesel is that it is produced from renewable resources, such as vegetable oils and animal fats, making it a sustainable alternative to traditional diesel fuel. Additionally, biodiesel has a lower carbon content than traditional diesel, leading to lower greenhouse gas emissions and improved air quality. The use of biodiesel can also reduce a company's dependence on foreign oil and promote domestic energy production, helping to boost local economies.

Despite these benefits, there are still some challenges associated with the use of biodiesel in construction equipment. For example, biodiesel can be more expensive than traditional diesel, which can be a barrier for some companies looking to make the switch. Additionally, some concerns have been raised about the quality and performance of biodiesel in various engine and weather conditions, which can impact its ability to perform in extreme conditions. We need to have the right certifications for the quality of the same.

The industry is very cautious to use them on construction equipment due to a lack of clarity on their purity and consistency apart from OEMs acceptance and warranty-related challenges. It's time to bring in certain regulations as being done for other fuels.

Hydrogen fuel is also gaining momentum. A few models were launched at the recently concluded Bauma, Munich. Days are not far before this sweeps the industry. Meanwhile, the relevant bodies in India need to organise campaigns to promote awareness.

While there are many technologies available or under development today that can reduce the carbon dioxide output of heavy equipment, nothing comes closer to net zero than hydrogen. By all accounts, it will be the fuel of the future, even if it isn't widely adopted until close to mid-century. Companies are taking adequate measures to power their machinery and equipment with renewable energy sources and put forward the strategy of "electrification". As the nation is ushering in new emission standards, most companies have embraced the Bharat CEV Stage IV norms and upgraded and launched new construction machinery into the market.



**Biofuels in India are of strategic importance as they augur well with the government's ongoing initiatives, such as Make in India, Swachh Bharat Abhiyan, etc.**



## Electrification on the rise

Recently at the bauma CONEXPO India exhibition, many manufacturers and OEMs launched their first hybrid and electric models, which was a delight of an event. We can see an upcoming trend shift to electric and hydrogen-powered trucks and equipment. Much awareness is needed in terms of Research and development of battery-powered construction equipment as the machines are heavy earthmoving machines.

The building sector is likewise being shaped by the electrification trend. Due to their numerous benefits, including being less noisy, more ecologically friendly, and more affordable than their gasoline-powered counterparts, electric and battery-powered equipment is gaining popularity. The demand for electric and battery-powered equipment is anticipated to increase in the future as people around the world become more aware of sustainability and the negative effects that carbon emissions have on the environment, despite the difficulties presented by the complex and expensive production of these devices and the recycling of batteries.

Low-emission driving and working is currently one of the main development goals of the construction machinery industry, with an international focus on battery-electric drives.

Construction equipment electrification is moving along quickly. A wide variety of new products entered the market last year as well. For instance, the micro excavator EZ17e was introduced as a series product by the Munich-based firm Wacker Neuson. The previous year, the equipment was already on display at bauma, an international trade expo for construction machinery held in Munich.

Even though electric propulsion (with cable) is not uncommon in some

equipment, battery-electric vehicles (BEVs) still make up a relatively small portion of the heavy machinery and equipment market. However, with the first commercial solutions beginning to appear on the market, both operators and OEMs have begun to invest in battery-electric systems.

## Rental: The next big thing

Rental is a capital-intensive business and most of this investment goes into the rental fleet. The compressor rental market is currently unorganised, fragmented, and scattered, with very few major players having a significant presence across the country. There are hundreds of small rental companies operating across India, and these companies are now diversifying. Gradually and eventually, rental companies are evolving instead of cutting the corners or compromising on the quality of fleets they are investing in energy-efficient technologies. The industry faces the concern of low rental penetration. This is because the number of organised players with large rental fleets is limited. This issue can be tackled by changing the mindset.

Rapid urbanisation and development are pivotal to its growth. This will directly affect the growing economy, bringing more opportunities for the construction business. The equipment leasing business is a widely recognised business sector in which suppliers and other professionals can rent out unused or idle equipment to other contractors and professionals. Smaller companies that are short of capital cannot buy construction equipment because of the small volume and uncertainty of projects.

So, to have optimisation of cost and time, leasing this equipment is done to small or medium construction companies. And the percentage of such names is higher.

The rental market offers several benefits to both contractors and

equipment manufacturers. For contractors, renting equipment can be a cost-effective solution, as they do not have to make a large upfront investment in equipment ownership. They can also have access to the latest equipment and technology, which can help to improve productivity and efficiency on the job site.

For equipment manufacturers, the rental market provides a stable source of income and helps to keep their equipment in use. This can also lead to increased sales, as contractors may be more likely to purchase equipment from a company that they have rented from in the past.

In conclusion, the equipment rental market is expected to grow in response to increased government spending on infrastructure projects. This growth can benefit both contractors and equipment manufacturers, providing a cost-effective solution for contractors and a stable source of income for equipment manufacturers.

In conclusion, the demand for infrastructure development has been a major driver of the growth of the equipment rental market. Companies in the construction and engineering industries are turning to equipment rental services for their cost-effectiveness, access to the latest equipment, reduced maintenance costs, and increased productivity, it is likely that the demand for equipment rental services will continue to grow in the coming years. In the past five to six years, rental penetration has grown multi-fold and is now close to over 40 per cent which was merely five to ten per cent six years back. The Construction Equipment Rental Association (CERA) played a vital role in increasing penetration with the right awareness and advocacy.

More than 20 industry stalwarts share best practices and future trends that will help achieve this.





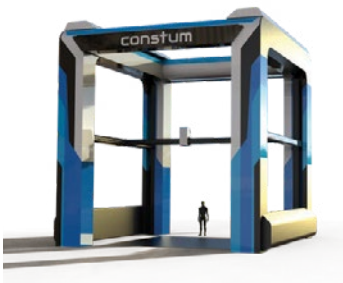


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# INCHING TOWARDS \$5 TRILLION ECONOMY

Infrastructure growth will play a significant role in achieving India's target of being a \$5 trillion economy by 2025. It is imperative to ensure sustainability during this journey, writes **SP Rajan**.



India is one of the fastest-growing economies and inching towards becoming a \$5 trillion economy by 2025. Infrastructure development will be the catalyst that will lead us to our dream. As we grow, there is a need to consciously address the catastrophic environmental effects of various initiatives toward growth. Thus, sustainability has become the star prefix for everything we do today.

Going with the theme of this edition SAfER, let us address a few feasibilities to which the equipment fraternity can contribute.

## Sustainability and OEMs

As organisations are pledging more resources towards improving ESG footprints, they are keen to switch towards equipment with more focus on eco-friendly operation and maintenance.

- A few areas where OEMs can contribute are:

- Equipment that is more energy efficient
- Equipment having fewer moving parts
- Equipment with regenerating power/energy
- Equipment with increased service intervals
- Consumables like filters, tiers, oils, and lubes made from environmentally friendly materials
- Automation and robotics for improved productivity with lesser input
- Modular equipment with multiple attachments and variable capacity
- Timely scrapping of inefficient/old equipment

## Alternate fuels

There is no prize for guessing the requirement of alternatives to fossil fuels used on our equipment. Biodiesel is one of the major alternatives and many blends of various proportions are

available in the market. The industry is very cautious to use them on construction equipment due to a lack of clarity on their purity and consistency apart from OEMs acceptance and warranty-related challenges. Logistics adds to the woes.

It's time to bring in certain regulations as being done for other fuels.

Hydrogen fuel is also gaining momentum. A few models were launched at the recently concluded Bauma, Munich. Days are not far before this sweeps the industry. Meanwhile, the relevant bodies in India need to organise campaigns to promote awareness.

## Battery-operated machines

Today, if one says that he has an electric car or scooter, we are not surprised. Widely accepted. Why not on construction equipment (CE)? The technology has undergone a sea change





and is now penetrating the construction equipment segment.

We do have a lot of electrically operated machines like tower cranes, boomers, drills, forklifts, compressors, etc. Thus, CE is not new to electrical operation. The intent to reduce dependence on fossil fuels is now redefining this ability. Battery-operated CEs have now started showing up here and there. As the features get refined, the pie is certain to increase. Some manufacturers have shown keen interest and introduced a few machines like pick-and-carry cranes, wheel loaders, trucks, tandem rollers, excavators, etc.

A few features that can be suggested to the electric equipment manufacturers are

- The autonomy of the battery must be for a min of 12 hours
- Battery Management System to be designed well for fast charging without affecting the existing infrastructure
- Govt must introduce codes for uniformity in BMS to facilitate portability
- Cartridge-like battery swapping facilities must be in place for round-the-clock operation
- Interchangeability of battery sets/modular battery sets must be in place
- More hybrids can be introduced. Solar plus electric or diesel plus electric. Etc to overcome any eventual emergencies
- Regenerative energy systems must

be seriously explored along with solar facilities for perpetual battery charging

- Create awareness of battery disposal/recycling policies
- Create awareness of safety
- To explore the possibilities of remote operations and automation. This can help reduce dependence on skilled manpower

### Gas-operated vehicles

Another easy and good concept is gas-based equipment. The machines do not need to undergo major changes for working on gas. The process is totally reversible and hence it is imperative that we use gas wherever the logistics support us.

A few city-based projects, particularly in Delhi and its surroundings are deploying more gas-operated construction vehicles. But, when it comes to construction machinery, it is again a great challenge due to logistics. A better logistics arrangement can help improve the deployment of more gas-based construction equipment. However, all the city-based projects must refrain from using diesel/petrol vehicles and must insist on only gas based.

**Solar:** Initially, construction projects were totally dependent on power from DG sets. Later, with an improvement in grid connections, electrical power started supporting construction projects. It is now time to see how to improve utilisation of solar power.

One megawatt solar plant will need about 4,400 sqm of area, and can be net-metered based on the regulations. A DG of 1 MW emits carbon of 1 MT for every eight hours of operation. One can easily imagine the environmental benefit of introducing solar plants for construction.

**Green pellets:** One of the areas where fossil fuel is consumed heavily is hot mix plants where diesel or furnace oil heats the bitumen as well as aggregates. This is a huge consumption.

One of the alternatives is gas based on plants. While gas has come to the rescue in some cities, thanks to regulators, the other locations are mostly greenfield, and hence getting a commercial gas connection for construction equipment is far from reality. We can think of using pellets at such locations for heating bitumen. Recent trials revealed a reduction of 200 mt of carbon for every 1 lakh tonnes of asphalt apart from cost savings.

To sum it up, infrastructure growth will play a significant role in achieving India's target of being a 5 trillion economy by 2025. It is imperative to ensure sustainability during this journey. The theme of this edition, SAfER, is very apt and in line with the trend. The total ecosystem, which includes but is not limited to, the government authorities, developers, contractors, equipment manufacturers, and equipment service providers (rental agencies), has to be in sync to ensure that we provide the best-in-class infrastructure for our people with the best approach that is environmentally friendly, energy-efficient and sustainable.



#### ABOUT THE AUTHOR:

**SP Rajan** is Head – Plant & Machinery at Larsen & Toubro. Having 35 years of experience in construction and infra, Rajan has been associated with leading organisations viz, HCC, Shapoorji Pallonji & Co, Mahindras and Welspun.



# BRINGING SUSTAINABILITY TO THE FORE

As an industry, construction equipment manufacturers are looking at the viability of electric equipment quite

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**T**his year, the Indian Government has given a massive push to the infrastructure sector by allocating ₹10 lakh crore (\$130.57 billion) for development in the sector. The National Highways Authority of India (NHAI) has been allocated ₹134,015 crore (\$17.24 billion). An outlay of ₹60,000 crore (\$7.72 billion) has been assigned to the Ministry of Road Transport and Highways.

For the Housing and Urban Development sector, ₹76,549 crore (\$9.85 billion) has been announced, and with the aim to create and augment telecom infrastructure in the country, ₹84,587 crore (\$10.87 billion) has been allocated to the Department of Telecommunications.

India is going to be a growth driver for the world in the coming decades, and much of this growth will come from infrastructure development in the country. Projects of significant

National importance are gaining encouraging momentum across the country. Large-scale Infrastructure development requires larger and more productive machines.

There has been a direct correlation between infrastructure development and equipment sales in the past. This year we witnessed a slow beginning in terms of equipment sales. This was due to a few reasons: the Russia-Ukraine conflict disrupted supply chains, and a steep increase in commodity prices led to lower demand in the year's first quarter. However, with the government's increased focus on the infrastructure sector, the cooling off of commodity and fuel prices, and the resumption of supply chains, we are seeing a steady rise in sales for construction equipment. Current trends indicate that the increase in the sale of machines will continue through the next year. It is predicted that the industry will see a growth of 15 to 20 per cent.

## JCB: Leading from the front

For over four decades, JCB has remained committed to the India growth story. From introducing the backhoe loaders in India in 1979, to the global manufacturing force the company has become today, JCB India has been making the nation and its communities stronger every day. With six state-of-the-art factories in India, it manufactures a wide range of world-class equipment, not only for India, but for over 125 countries. Driven by constant innovation, revolutionary products, and adherence to global quality standards, JCB has sold over 3,50,000 machines - furthering the 'Make in India' initiative and steering millions towards empowerment. India is today not only an important market for JCB but is also the global manufacturing hub for the Group. Our focus on one global quality has led JCB to explore global markets on such a large scale.

The JCB backhoe loader continues



to be a favourite for Infrastructure projects for the last 42 years since it is a versatile, easy-to-use, and easy-to-transport machine. It is suitable for government projects like the Pradhan Mantri Gram Sadak Yojana (PMGSY) and Har Ghar Jal in rural areas. PMGSY was launched by the Government of India to provide connectivity to unconnected habitations as part of a poverty reduction strategy. According to the latest figures, about 167 thousand unconnected habitations are eligible for coverage under the programme. This involves the construction of about 371 thousand km of roads for New Connectivity and 368 thousand km under upgradation. The Har Ghar Jal mission is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.

While the backhoe loader is an ideal machine to reach remote/rural areas, with new road development projects coming up in remote areas, we are also seeing an increase in the purchase of excavators and mini excavators. Projects of significant national importance are gaining encouraging momentum across the country. Large-scale Infrastructure development will require larger and more productive machines, and a recently launched new range of excavators (JCB NXT 225LC M) addresses that need.

We are also observing an increase in government tenders floated to acquire construction equipment. The municipal corporations of big states like Maharashtra, Gujarat and Uttar Pradesh regularly acquire JCB machines. In rural sectors, Gram Panchayats across the country float tenders for equipment that is regularly fulfilled by JCB.

Sales of construction equipment — a barometer of economic activity — is expected to increase in healthy double digits in the ongoing financial year on

the back of increased government spending on infrastructure projects, especially in rural areas.

The industry estimates sales of construction equipment (domestic sales and exports) to grow 15 to 20 per cent in fiscal 2023. Since JCB has a high market share in the sector, the demand for JCB equipment will increase accordingly. One in every two machines is a JCB and we expect that we will continue to support the government at the same level.

### Electric equipment on the rise

As an industry, construction equipment manufacturers are looking at the viability of electric equipment quite seriously. JCB India has been working on its 'Road to Zero' initiative for the past few years. Early this year we introduced the industry's first fully electric excavator, the JCB 19C-1E at Excon, Bengaluru. JCB 19C-1E is a zero-emission machine and has four lithium-ion batteries that power the machine for a full day on a single charge. With a significant focus on safety and productivity, JCB's 2GO system safely isolates all controls as a secondary safety system. Its auto-idle

and auto kick-up redistribute power to preserve battery life. The machine has been introduced after rigorous testing and validation.

Manufacturers need to focus on smaller machines to make the Electric segment popular in the construction equipment category. These machines can work well in urban areas and indoor projects. Smaller machines can also work well inside tunnels for hydro, metro, and road construction projects.

We will require a robust infrastructure to support electric construction equipment. India right now is at the initial steps of the electric equipment revolution. The Government has a relentless focus on the development of EV-compliant infrastructure across the country.

A private consumer expectation survey recently showed that around 66 per cent of Indians said that electric vehicles will surpass petrol and diesel cars by 2030. For electric construction equipment, popularity will depend on manufacturers' investment to develop smaller engines that can provide a powerful experience without compromising on the overall cost of the machine.







**JCB has continued to make concerted efforts to conserve and optimise the use of energy and adopted various measures for the purpose.**

## Infra boost for CE sector

India's infrastructure development for the next decade is lined with huge projects and government schemes. Plans to develop India's infrastructure have been given impetus through the National Infrastructure Pipeline (NIP), the National Monetisation Plan (NMP) and Gati Shakti and the National Single Window System (NSWS).

NIP is an aggregation of social and economic infrastructure projects. It aims to enhance investor confidence through better access to financing resources, and better management of projects. The NMP monetises previously government-operated sectors by transferring the operations to private companies in sectors like railways, roadways, airports, energy, etc.

Gati Shakti is India's master plan for multi-modal connectivity that brings together 16 ministries to coordinate infrastructure development to ensure last-mile connectivity and network between the various modes of

transportation. The NSWS is another strategic policy to implement NIP and NMP. It is an online platform where investors can apply for clearances. The issues of delays in approvals and provision of information are dealt with through NSWS.

Under the Bharatmala programme, the government is planning the construction of 22 greenfield expressways, 23 tunnels and bridges, and 35 multi-modal logistics parks.

Cargo traffic in India is expected to reach 2,500 MTPA by 2025. In 2021, the Indian government announced plans to upgrade port infrastructure and an investment of \$82 billion in port projects. It has identified 92 non-major ports for capacity expansion, adding 712 MTPA to the existing capacity. The government's ₹6,50,000 crore (\$ 97.5 billion) Sagarmala programme will address this need by undertaking projects such as national waterways, last-mile road and rail connectivity, construction of multi-modal logistics parks, and connecting ports to freight

corridors.

India has the world's fourth largest railway network and for FY2023, ₹1,40,000 crore (\$21.5 billion) have been allocated to the Railways. The government also plans to improve Railways' freight movement to 45 per cent from the existing 26 per cent. Railway development plans include the renovation of 400 existing stations and the development of 40 new stations.

We are slated to become the world's third-largest aviation market for passenger traffic. The government plans to increase the total number of airports from 140 in 2022, to 220 by 2024. Passenger traffic is estimated to grow to 520 million by 2037. Early this year construction of 21 airport projects was approved and the government plans to build airports in tier 2 and 3 cities.

The Government of India has also introduced the National Logistics Policy (NLP) and the National Bank for Financing Infrastructure and Development Bill (NBFID) to back up infrastructure projects nationally.





The NLP 2022 developed by the Commerce and Industry Ministry aims to increase India's ability to compete internationally, generate more jobs, boost its standing in international rankings, and open the door for India to develop into a logistics powerhouse. The policy aims to make Indian goods more competitive while also promoting economic growth and expanding job possibilities.

To increase long-term funding for infrastructure projects, the NBFID bill was introduced in March 22, 2021. It seeks to establish the National Bank for Financing Infrastructure and Development (NBFID) as the principal development financial institution (DFIs) for infrastructure financing. DFIs source long-term funds from the market, government, as well as multilateral institutions, and are supported through government guarantees.

Among the people of the country, there resides a sense of faith in the India growth story owing to its political stability and policy reforms in the past decade.

We continue to invest in research and development toward waste elimination and are hopeful of eliminating maximum waste in the coming years.

## Sustainability

Advancing our sustainability agenda in India, we introduced targeted interventions in our operations, packaging, and distribution, with a focus on saving waste, reducing carbon, and improving people's lives. Our Ballabgarh unit has achieved zero waste to landfill and other plants will achieve this by end of this year. We have collected and recycled 42 MT of post-consumer plastic as part of our extended producer responsibility commitment. We have completed our carbon inventory for scope-1 and scope-2 and more projects are being

identified to reduce carbon intensity through the addition of renewable energy and resource optimisation.

We are the first in the industry to shift the logistics mode from road to rail for backhoes. A total of 2,691 backhoe machines have been transported by rail through 32 rail trips in 2021-22.

The company continued to make concerted efforts to conserve and optimise the use of energy and adopted various measures for the purpose, including the following:

- Healthy power factor ratio of 0.99 has been maintained at all manufacturing locations.
- Energy Conservation of 2400 KWH/day is achieved through synchronisation, monitoring, controlling and arresting of air leakages and achieved air leakage reduction of 426 CFM
- Energy consumption reduction (1400 KWH/Day) by installing LED lights for the plant.
- Energy conservation of 823 KWH/Day by installing a new energy-efficient air washer
- Energy efficient (Low KW/CFM) air compressor for manufacturing.
- Optimised use of production facilities like paint and assembly lines to reduce specific energy per machine.
- Monitoring and control of harmonics in the power system by installing AHF to achieve best-in-industry THD (< 5 per cent).

The company has taken several steps for utilising alternate sources of energy which may be summarised as under:

- 4 MW rooftop solar plant at Pune and Jaipur.
- Usages of solar power bank of 40 kW (Outside periphery streetlights)
- Use of electric/battery operated tools, Forklifts instead of pneumatic tools and diesel forklifts for better

efficiency and reducing operating cost.

- Use of PNG in place of LPG in the kitchen.

Number one on our priority list is reducing total waste. Linked to this is the issue of single-use plastics which, for many years, have been a wasteful use of resources. We also now recognise that they contribute to the pollution of our oceans, harming wildlife, and preventing the recovery of this valuable resource. We're currently working hard to understand how we can avoid single-use plastics and packaging in our business. All the manufacturing locations have taken at least two waste reduction projects. This has helped to reduce packaging waste by 15 per cent and we are all set to achieve zero single-use plastic usage.

Two have our manufacturing locations have achieved "zero waste to landfill". This has been possible as the locations have started giving hazardous waste to cement industries, which co-process this waste for their internal use. So, all our waste becomes their raw material. This is a perfect example of a circular economy wherein everything is utilised and nothing goes out as waste.



### ABOUT THE AUTHOR:

**Deepak Shetty** is CEO and MD of JCB India. Before this, he was the Executive Vice President - Sales, Marketing, Product Support and Business Development for JCB India

and the South Asia Region. Under his leadership, JCB's iconic backhoe loader, a product that it introduced four decades ago, has reinforced its leadership in the Indian construction equipment market. He has also led to establishing JCB's tracked excavators as a leading player in the industry more recently. Based out of the India headquarters at Delhi-NCR, Deepak has been with the company for over a decade in various leadership roles, both in India and at JCB's world headquarters in the UK. He joined JCB India's Pune operations in 2010 and was instrumental in developing it into a global manufacturing hub for the group. He later went on to become the Managing Director of JCB's Global Excavator business in the UK for four years.



# MUCH BETTER TO BE SAFER THAN SORRY

Sustainable innovation is at the core of Volvo Construction Equipment. It is a work in progress and spans decades.

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As India becomes the world's most populous country, the imperative for sustainable infrastructure development is greater than ever. Green growth – from green energy to green equipment – is now the new mantra – to ease congestion with less pollution, streamline movement with a minimal carbon footprint, promote economic growth without depleting resources, and improve the overall quality of life without endangering more lives. The recent Union Budget has laid out a clear path forward to pursue sustainable infrastructure development on a massive scale over the long term.

At Volvo Group, sustainability is central to the way we think and the work we do. As world-leading manufacturer and the oldest active company in the construction equipment industry, we believe we have a responsibility to accelerate solutions that help usher in a world we want to live in. So, we are driving change – here and now – with path-breaking concepts, technologies, policies and approaches. And we are doing it all to realise the two goals we have set for ourselves

worldwide – reduce carbon emissions by 50 per cent in overall operations by 2030 and achieve 100 per cent fossil fuel-free vehicles from 2040.

Sustainable innovation is at the core of Volvo Construction Equipment. It is a work in progress and spans decades. We have pioneered several cutting-edge technologies and concepts across our entire product range to benefit both our customers and the environment we live and work in. Today, our machines lead the industry with best-in-class fuel efficiency, reduced noise pollution, and unmatched operating safety and comfort. Our machines are also compliant with stringent emission norms and fully capable of running on eco-friendly biodiesel fuel.

Our policies and approach are equally focussed on sustainability. We strive to be holistic and collaborative, engaging everyone across all parts of the value chain. From our employees, customers, suppliers, and other stakeholders to raw material sourcing, and manufacturing processes and through the entire product lifecycle, we ensure there is active involvement and contribution towards managing the

earth's resources responsibly. So that whatever and wherever be the nature and challenge of infrastructure development, the solution we deliver has to be sustainable.

Volvo Construction Equipment is heavily invested in the green journey. Our R&D is at work 24/7 on machines of the future – from battery-operated and hydrogen fuel-cell based products to grid-connected machines. At bauma Conexpo India 2023, we unveiled – for the first time in India – the EC55 Electric Compact Excavator and SDLG L956HEV Electric Wheel Loader. This is just the beginning of a series of products from Volvo Construction Equipment that will change the face of construction in India – all electric, zero-emission machines with low noise and fewer vibrations – opening up new opportunities for businesses to operate in all kinds of areas at all odd hours.

At the end of the day, sustainable infrastructure development is all about leveraging cutting-edge technologies with responsible strategies and abiding passion so that our planet's limited resources are not stretched outside the comfort zone. At Volvo Construction Equipment, we are determined to build the tomorrow of our dreams – a tomorrow we can all be proud of and cherish for generations to come.



(ICEMA).

## ABOUT THE AUTHOR:

**Dimitrov Krishnan** is Managing Director at Volvo CE India. He is also the President of Indian Construction Equipment Manufacturers Association



**ARX 90.2 ARTICULATED TANDEM ROLLER  
CEV STAGE IV**



# A SMOOTH, POWERFUL ROLLER

## ROLL WITH THE CHANGES

What can the Ammann ARX 90.2 Articulated Heavy Tandem Roller bring to your business?

- One of the highest compaction outputs in the 9-tonne weight range
- A machine that thrives in multiple applications thanks to its drum dimensions, frequencies and amplitudes
- A unique propulsion system that enables smooth starts, essential when working on asphalt
- Cost savings after the purchase through exceptional fuel consumption, convenient service points and self-lubricating bearings

The ARX 90.2 is built in India – especially for the Indian market.



# TOWARDS A SUSTAINABLE FUTURE

Tata Hitachi is committed to provide customers with products that offer social, environmental, and economic value.



**T**o pass on a productive environment and prosperous cities to future generations' is the corporate vision of our parent company Hitachi Construction Machinery (HCM) and at Tata Hitachi, sustainability is about reinforcing this vision.

Sustainability is at the core of everything we do at Tata Hitachi. We are deeply invested and committed to reducing our carbon footprint using eco-friendly technology and practices. We believe that it is our responsibility to protect the planet for future generations and are continuously implementing measures to minimise waste, conserve resources and reduce emissions. Our team is dedicated to finding innovative solutions that not only benefit the environment but also provide customers with cost-effective and efficient equipment. We believe in sustainability and our belief is implemented through initiatives both in terms of products and production methods.

Believing that Tata Hitachi is much more than its products or technical capabilities, we are committed to creating a better world by contributing to society. Our result-oriented

corporate social responsibility (CSR) programmes focus on serving the local communities where we operate.

## Environmental sustainability

Tata Hitachi promotes the eco-friendly design of our products and services. Apart from ensuring that our wheeled equipment adheres to regulatory requirements of CEV-4 emission norms, we are working to ensure that our excavators are also compatible with futuristic emission norms. In addition, we also maintain a target of reducing fuel consumption of all our products and models through engineering innovations. With our TL340H PRIME, we are also the first and only manufacturer in India, of hydrostatic wheel loaders that assure fuel savings to the tune of 20 per cent over conventional wheel loaders. Also, Tata Hitachi excavators are very well-known in the market for their fuel efficiency.

We have made significant investments in our plants at Dharwad and Kharagpur towards renewable energy, rainwater harvesting, and reusing ETP water for irrigation, apart from creating biodiversity parks and improving the quality of potable water in the catchment areas of our

manufacturing plants. Our Kharagpur plant has an installed solar capacity of 10.5 MW that meets 74 per cent of our power requirements, while our Dharwad plant has a target to meet 90 per cent of power requirements through solar power through a power purchase agreement. In addition, the administration buildings of both our plants are LEED-certified green buildings. We also have a special focus accorded to safety, both in terms of employees as well as the safety of our machines.

For the effective use of resources, we promote a circular economy through our used equipment business and remanufacturing of the parts. These initiatives are aimed at ensuring a sustainable consumption and production pattern by enhancing the value of the product life cycle.

Recently, the Confederation of Indian Industry (CII) recognised Tata Hitachi's efforts in the field of energy conservation and management at the CII Energy Conservation Awards 2022. Our Kharagpur plant has been awarded a 5-star rating for its efforts toward energy conservation and has also been adjudged as the first runner-up in the energy-intensive group category at the event. In 2021, HCM, Japan, selected



both our Kharagpur and Dharwad plants as 'ECO Factory of the Year' for outstanding efforts in energy efficiency, use of renewable energy, recycling of wastes and other resources, and efficient water recycling.

### Social sustainability

Tata Hitachi has a structured CSR process to fulfill the needs of immediate stakeholders. We have a four-pronged approach for our CSR initiatives:

**Education and literacy:** Schools are supported by Tata Hitachi for their infrastructural improvements such as the construction and extension of classrooms, the building of toilets, providing tanks for a continuous and adequate supply of drinking water, etc. For school-going children, our aim is to create a lively, welcoming, and wholesome environment conducive to learning. Facilities for these include supplying benches, computers, projectors, school bags, notebooks, and sports items. With the same objective in mind, we also sponsor extracurricular events in these schools.

**Community healthcare:** Increase in life expectancy and access to healthcare are again other vital indicators of

socio-economic welfare. Organising health check-up camps like eye check-ups, general check-ups, and addressing ladies' health issues, etc. are periodically done inside the plant for employees and their families, as well as at nearby villages where the whole community can benefit. This is our way of meaningfully providing a service to the villages surrounding our factory. Even during the Covid-19 pandemic, we supported the local communities.

**Rural development:** We undertake various infrastructure support to local villages to satisfy their basic needs. It is a concerted effort to use and manage natural resources to maintain a balanced ecosystem. This is done through the de-silting of lakes and the building and repairing of bunds. North Karnataka is generally a drought-prone region. Lakes dry up during the summer season. Our lake de-silting activity increases the capacity of storage water and ensures the availability of water in the lakes throughout the year. This in turn supports human beings, animals, and birds.

**Skill development training for youths from local communities:** We

have an operator training centre with a facility for training on operating construction equipment like hydraulic excavators, backhoe loaders, and wheel loaders. This setup is elaborate with experienced trainers from across the country imparting training. This is backed up by a state-of-the-art simulator for machine operation conditions simulation which gives near-real-life machine operating conditions for the trainees. Once the course is completed the participants are given certificates in collaboration with GoI, which help them to get a job as machine operators easily across the country.

Despite the changes and challenges we face, at Tata Hitachi, we are committed to providing customers with products that offer social, environmental, and economic value, and the value chain that goes along with it. We encourage our partners and customers to join us in this mission and work together towards a more sustainable future. We believe that by making conscious choices and investing in sustainable technology, we can make a positive impact on our planet. 



**The company promotes a circular economy through its used equipment business and remanufacturing of the parts.**



#### ABOUT THE AUTHOR:

**Sandeep Singh** is Managing Director of Tata Hitachi Construction Machinery. Singh is an engineering graduate from the National Institute of Technology, Surat, and has a rich experience of over three decades in sales, marketing, customer support, and general management. He has spent a large part of his career at Toyota. His last assignment was as Deputy Managing Director and Chief Operating Officer of the India Operations. Post this, he moved with an international assignment to Toyota Motor- Asia Pacific Head Quarters and was based in Bangkok, Thailand where he was responsible for leading the strategic planning function. Singh joined as Managing Director of Tata Hitachi Construction Machinery Company in August 2015, where he is guiding the company through its next phase of growth. He is also Executive Officer- Hitachi Construction Machinery, Japan. He is the current Chairman of the Infrastructure Equipment Skill Council (IESC) and the past Chairman of ICEMA and CII, Karnataka.



# REDUCE, REUSE, AND RECYCLE!

In addition to reducing waste in construction, the Ministry is also working to decrease emissions from road transport and reduce the country's dependence on oil imports through the use of alternative fuels.

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**T**he construction industry is undergoing a significant shift in response to growing concerns over sustainability and the environment. This change is driven by a combination of government regulations and consumer demand, resulting in four key trends: Sustainability, Alternative Fuel, Electrification, and Rental (SAFER). These trends are pushing the industry forward by inspiring manufacturers and contractors to seek innovative, cost-effective solutions to reduce their carbon footprint and minimise waste.

Sustainability is a critical aspect of modern construction, with contractors searching for ways to reuse materials, recycle resources, and decrease waste. One company that embodies this approach is MB Crusher, which is established with the clear objective of “reduce, reuse, and recycle”. MB Crusher specialises in crushing and is dedicated to maximising the use of existing resources and reducing waste. This environmentally conscious approach is reflected in everything the company does, from its commitment to continuous

improvement and innovation to its focus on offering efficient and reliable crushing solutions.

Another area of concern in construction is the extraction of construction materials from quarries, which can have a significant impact on the environment. To address this issue, the Ministry of Road Transport and Highways (MoRTH) is taking proactive steps to reduce the carbon footprint of the industry and promote sustainable construction practices. This includes the use of waste materials, such as fly ash, iron slag,



and demolition waste, in highway construction, as well as the use of sustainable materials, such as biomass-based bio-binders and ultra-high-performance fibre-reinforced concrete, to lower emissions and improve the quality of construction.

In addition to reducing waste in construction, MoRTH is also working to decrease emissions from road transport and reduce the country's dependence on oil imports through the use of alternative fuels. The widespread adoption of electric vehicles (EVs) is seen as a crucial step in reducing carbon emissions, and MoRTH is encouraging the use of ethanol blending and hydrogen fuel cell EVs as alternatives to traditional fossil fuels. Contractors looking to reduce their carbon footprint are also being encouraged to use biodiesel, which is made from renewable resources and is cost-effective.

The trend towards electrification is also shaping the construction industry. Electric and battery-powered equipment, due to its many advantages such as being environmentally friendly, producing low noise, and having lower price points compared to gasoline-powered counterparts, is becoming increasingly popular. Despite the challenges posed by the complex and expensive production of



**The trend towards electrification is shaping the construction industry.**

these devices, and the recycling of batteries, the demand for electric and battery-powered equipment is expected to continue growing as the world becomes more conscious of sustainability and the impact of carbon emissions on the environment.

The equipment rental market is growing as contractors seek cost-effective solutions to improve sustainability and reduce their carbon footprint. Renting equipment allows contractors to use the latest technologies and innovations without a large upfront investment, making it a more sustainable option for the industry. Growth in the equipment rental market is also being driven by government spending on

infrastructure projects.

In conclusion, the construction industry is undergoing a transformation as it responds to concerns over sustainability and the environment. The four key trends of Sustainability, Alternative Fuel, Electrification, and Rental (SaFER) are driving this change and inspiring manufacturers and contractors to seek innovative, cost-effective solutions to reduce their carbon footprint and minimise waste. Sustainability will continue to shape the industry in the years to come, driving growth and innovation in the construction sector.

However, the transition to a more sustainable construction industry is not without its challenges. One major challenge is the cost of transitioning to more sustainable construction practices. For example, the capex of electric and battery-powered equipment can be higher than traditional gasoline-powered counterparts. In addition, the production and maintenance of these devices are often complex.



**The equipment rental market is growing as contractors seek cost-effective solutions to improve sustainability.**

#### ABOUT THE AUTHOR:

**Piero Guizzetti** is CEO, MB Crusher India, a world leader in the production of bucket crushers and screening buckets.





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# SUSTAINABILITY AT THE FOREFRONT

Going forward, product innovations will be at the core of Ammann's sustainability efforts.

**A**mmann India has always been at the forefront of technological development in the construction equipment industry. Just like the Ammann Group's brand slogan, "Stronger Together", we believe in developing and introducing products that keep our customer's interests in mind. Be it enhanced productivity, reliability, excellent quality, low fuel consumption, low electricity consumption, or low carbon emissions, Ammann India has always stepped up to the challenge and delivered value.

At Ammann Group, we look at sustainability as a very important aspect of our business and we're fully committed to doing our part. Not only

are our investments in sustainability essential to fight climate change and protect the environment. They're also essential to protect our customers' businesses, and thus ours.

We successfully elaborated a first group-wide "greenhouse gas accounting". This is a highly detailed analysis of all emissions directly or indirectly associated with our business and operations. The results now give us a deep understanding of where we stand today. And this, allows us to make fact-based decisions and prioritisations for upcoming initiatives and development investments.

In addition to capturing our overall carbon footprint, a high-level emission reduction roadmap was elaborated. For

these calculations, the results of the greenhouse gas accounting act as a baseline. Our today's emissions are then reduced by projecting numerous very specific reduction measures along the time axis. This gives us a realistic idea of how our carbon footprint will decrease over time, and which measures contribute the most to our ambitious targets.

Sustainability was of course also a core topic at last year's Bauma fair in Munich. We were able to show our customers many innovative and sustainable solutions with which they can reduce their footprint today and tomorrow. These solutions include among others digital services, alternative/biogenic fuels, and electrified machines.

Also going forward, product innovations will be at the core of our sustainability efforts. For our customers, the emissions our products emit during operation are direct emissions from their core business.



Thus, it is essential that we can offer greener alternatives to today's technologies and fuels. And this is not only in the interest of the environment but in times of high energy costs and also in the interest of reduced operating costs for our customers.

For example, some of the innovations that we have recently introduced include but are not limited to, higher usage of recycling asphalt in combination with low-temperature asphalt, which will not only reduce carbon footprint, but it will also reduce transportation, and harmful emissions and preserve natural resources. Recycling of asphalt is becoming more and more common and we at Ammann globally have the technology to use even up to 100 per cent recycled material. Our closed-loop precise control of aggregate temp will reduce fuel consumption. The state-of-the-art bag house can restrict particulate matter emission to less than 20 mg/Nm<sup>3</sup>. Our usage of direct drives and variable frequency-controlled motors will help in the usage of optimum power.

### Alternative fuel

Gas as an alternative fuel solution is already being offered in our asphalt plants where LPG or CNG is used as a fuel for aggregate heating and thermic oil heating.



**Ammann is also developing a range of rollers and compactors that are fully electric.**

We are also exploring options for liquid fuel-based alternatives for achieving reduced carbon emissions in diesel vehicles and machinery. With credits and incentives that are offered, biodiesel is cost-competitive and in some regions can be a lower-cost option than traditional diesel. When considering the price of carbon and the fact that the price of diesel is expected to continue to rise, biodiesel is an easy choice. Biodiesel emits 50 per cent fewer soot particles, allowing for dramatically improved localised air quality.

### Electrification

While the idea of electric vehicles has been fast emerging around the world, Ammann Group has also been developing a range of rollers and compactors that are fully electric.

However, we expect to see a switch to green hydrogen sooner than later. We are also exploring ways to use green hydrogen and fuel cells in our equipment. Research and development in this direction are in progress at our global R&D centre in Switzerland.

### Rental focus

In the recently announced union budget, the capital investment outlay is being increased steeply for the third year in a row by 33 per cent to ₹10 lakh crore.

The government's increased focus on infrastructure projects like metro projects, railways, airports, highways, bullet trains, housing for all, and rural roads is expected to have a positive effect on the construction equipment rental industry.

The rental market in the construction equipment segment is very vibrant and with the renewed focus of the government on infrastructure, the future looks bright. We at Ammann India are open to offering our plants and machines with attractive finance schemes through the rental players too.



**Ammann is exploring options for liquid fuel-based alternatives for achieving reduced carbon emissions in diesel vehicles and machinery.**



#### ABOUT THE AUTHOR:

**Anand Sundaresan** is Managing Director India & Executive Vice President of Ammann India. Before joining Ammann, he was with Schwing Stetter India as Vice Chairman and Managing Director.



# IMPROVING CONSTRUCTION PRODUCTIVITY

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LiuGong is committed to offering sustainable solutions to its customers, and the company is actively working to reduce emissions, conserve resources, and improve efficiency in the construction and material handling industries.

**L**iuGong is a leading manufacturer of construction and material handling equipment, and the company has been committed to offering sustainable solutions to its customers.

Here are a few examples:

## Energy-efficient equipment:

LiuGong offers a range of construction equipment that is designed to be highly energy-efficient, reducing emissions and improving fuel efficiency. For example, the company's excavators feature advanced hydraulic systems that optimise power consumption and reduce emissions.

## Electric and hybrid equipment:

LiuGong is actively developing electric and hybrid equipment, including excavators and wheel loaders, to help reduce emissions and improve efficiency. These machines use electric drive systems and energy storage systems to reduce emissions and improve performance.

**Sustainable manufacturing practices:** LiuGong has implemented sustainable manufacturing practices in its factories, including the use of recycled materials and energy-efficient production processes. The company also implements waste-reduction strategies to minimise its environmental footprint.

**Clean energy generation:** LiuGong is investing in clean energy generation, including the use of solar and wind power to offset energy consumption in its factories.

## Research and development:



LiuGong invests heavily in research and development, focusing on creating new and innovative solutions that are sustainable and environmentally friendly. The company is dedicated to improving the sustainability of its products and processes over the long term.

In conclusion, LiuGong is committed to offering sustainable solutions to its customers, and the company is actively working to reduce emissions, conserve resources, and improve efficiency in the construction and material handling industries.

It seems to suggest a focus on

sustainable transportation solutions, including the use of alternative fuels, the electrification of vehicles, and rental options for these vehicles. The use of alternative fuels and electrification can reduce the carbon footprint of transportation, while rental options can provide more flexible and cost-effective access to sustainable transportation options.

Alternative fuel vehicles (AFVs) are seen as a potential solution to address the negative environmental impacts of conventional gasoline and diesel vehicles. The sustainability impacts of AFVs depend on several





factors, including the type of alternative fuel used, the efficiency of the vehicle, and the methods used to produce the fuel.

Here are some of the most common AFVs and their sustainability impacts:

#### **Battery electric vehicles (BEVs):**

BEVs run on electricity stored in batteries, which can be charged from the grid. When powered by clean, renewable energy sources like wind and solar, BEVs can have a much lower carbon footprint than conventional vehicles. However, if the electricity used to charge the batteries is generated from fossil fuels, the environmental benefits may be limited.

#### **Hybrid electric vehicles (HEVs):**

HEVs use a combination of an internal combustion engine and an electric motor, and can run on either the engine or the battery. The efficiency of HEVs can vary, but they generally use less fuel and emit less CO<sub>2</sub> than conventional vehicles.

#### **Plug-in hybrid electric vehicles (PHEVs):**

PHEVs are similar to HEVs, but they have a larger battery and can be charged from an external power source. PHEVs can run on electric power for short distances, reducing the amount of fuel used and emissions produced.

#### **Hydrogen fuel cell vehicles (FCVs):**

FCVs use hydrogen as fuel and emit only water vapour as a by-product. However, the production of hydrogen fuel still has a significant carbon footprint, as the majority of hydrogen is currently produced from natural gas.

**Biofuels:** Biofuels, such as ethanol and biodiesel, are made from renewable plant materials and can reduce greenhouse gas emissions compared to conventional gasoline and diesel. However, the sustainability of biofuels depends on the methods used to produce them, as well as the land use changes and emissions associated with growing the feedstocks.

In conclusion, the sustainability

impacts of AFVs can vary widely depending on the type of fuel and the method of production. While AFVs have the potential to reduce greenhouse gas emissions and improve energy security, it is important to carefully consider the full lifecycle impacts of each type of vehicle to ensure that they are truly sustainable.

### **Rental market to rise**

The infrastructure sector is a key driver of economic growth, and government spending on infrastructure projects can have a positive impact on the equipment rental market. When infrastructure projects are initiated, a large amount of equipment is required to complete the construction and maintenance work. This increased demand for equipment can lead to a rise in the equipment rental market, as more contractors and construction companies turn to rental providers to obtain the equipment they need.

The rental market offers several benefits to both contractors and equipment manufacturers. For contractors, renting equipment can be a cost-effective solution, as they do not have to make a large upfront investment in equipment ownership. They can also have access to the latest equipment and technology, which can help to improve productivity and efficiency on the job site.

For equipment manufacturers, the rental market provides a stable source of income and helps to keep their equipment in use. This can also lead to increased sales, as contractors may be more likely to purchase equipment from a company that they have rented from in the past.

In conclusion, the equipment rental market is expected to grow in response to increased government spending on infrastructure projects. This growth can benefit both contractors and equipment manufacturers, providing a cost-effective solution for contractors

and a stable source of income for equipment manufacturers.

### **Growing demand for electric CE**

Yes, electric construction machinery is becoming increasingly popular in the construction industry due to a growing emphasis on sustainability and the need to reduce emissions. Electric construction machinery operates on electric drive systems rather than traditional internal combustion engines, and they produce zero emissions on the job site.

The benefits of electric construction machinery include improved energy efficiency, reduced operating costs, and a reduced impact on the environment. Additionally, electric construction machinery can be more reliable and require less maintenance than traditional equipment, as they have fewer moving parts and do not require oil changes or other routine maintenance tasks. In recent years, there has been a growing demand for electric construction machinery, and many manufacturers have responded by developing new and innovative electric equipment. This includes electric excavators, wheel loaders, cranes, and other construction equipment.

In conclusion, the use of electric construction machinery is on the rise, as the construction industry shifts towards more sustainable and environmentally friendly practices. Electric construction machinery offers a range of benefits, including improved energy efficiency, reduced operating costs, and a reduced environmental impact, and it is expected to continue to gain in popularity in the coming years.



#### **ABOUT THE AUTHOR:**

**Nischal Mehrotra** is Vice President - Sales & Marketing at Liugong India, one of the leading manufacturers of construction and heavy machinery.





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# FOCUS ON SUSTAINABLE ROAD CONSTRUCTION

Wirtgen Group anticipates a continuous increase in the number of sustainable machine and technology solutions by 2026.

The Wirtgen Group supports and assists its customers in fast and cost-efficient ways, with the realisation of the world's continuously growing demands for infrastructure and the fulfillment of specific criteria relating to environmental protection and the safety of humanity and nature. These include solutions for individual machines and their engine and drive train technologies for complete production systems in the road construction sector.

The company's holistic approach to the entire road construction process chain promises the most effective understanding of the greatest ecological and economic potentials.

## Digitisation as a driver of safety and sustainability

Alongside machine efficiency and alternative applications and methods, digitisation and connected system solutions are important drivers in the

development of the overall road construction process chain. The Wirtgen Group has developed application-specific core technologies, digital solutions, and technologies of tomorrow that are already available for our customers.

## The sustainability strategy

The Wirtgen Group is a pioneer in the realisation of greater mobility in road construction. And, in this process, sustainability is a mainstay of the group's corporate strategy. As a part of the John Deere Construction and Forestry Division, the sustainability goals of the Wirtgen Group make a valuable contribution to the overall strategy. For instance, a significant reduction of the emissions from transporting and operating machines and the overall activities at the group's production facilities and sites is expected by 2030. At the same time, the Wirtgen Group anticipates a continuous increase in the number of

sustainable machine and technology solutions by 2026. Electric rollers from HAMM - Demand for low-emission or even zero-emission construction machines keeps growing. And the road construction and earthworks sector are no exception to this trend. HAMM has factored this into its product development, enabling customers around the world to benefit from quiet and emission-free compaction with electric rollers.



## ABOUT THE AUTHOR:

**Ramesh Palagiri** has completed 15 years as a Managing Director and CEO of Wirtgen and has been a member of the John Deere Worldwide Leadership

Council since 2017. During his tenure, the Wirtgen Group invested in a new manufacturing facility at Pune in 2009, to cater to the domestic market as well as for exports. Today, the Pune plant caters to the global market with more than 65 per cent of production being exported to 72 countries. Before he joined the Wirtgen Group, Palagiri was the Chief Operating Officer at Schwing Stetter India, a startup where he spent the first eight years since its inception.





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# PAVING THE WAY FOR SAFER FUTURE

The outlook for the construction equipment industry is largely positive, including the rental market space, writes **Dheeraj Panda**.

**S**ustainability is the key to a better future. At Sany, we put research and development at the core of what we do to search for new ways to make our products better. In line with Industry 4.0, we are committed to developing intelligent machines that apply the internet to the whole manufacturing process. With increasingly severe energy and environmental challenges,

sustainable manufacturing options driven by artificial intelligence and cutting-edge technologies have become rather significant.

We aim to create a greener construction machinery industry with our new generation of clean-energy products and, on a wide scale, a greener future for mankind where people lead a sustainable way of life. In this aspect too, we stay close to our

mission statement of quality changes the world by focusing on sustainable manufacturing methods as the demand for electrification and new, low-carbon energy rises. It is imperative to mention here that we have also started making our machines to suit the Indian terrain and, as per the local requirements, thereby consolidating our support for vocal for local.



## Sustainability and automation to enhance efficiency and quality of construction

The construction industry can meet the needs of the present while preserving the needs of the future generation with the use of recycled materials, plastic wastes, self-healing asphalt, etc. At Sany, we have seen that biodiesel can replace fossil fuel as a clean energy source and our B-V biodiesel machines are a significant step towards sustainability.

We also view the electrification of the construction equipment segment as an essential update to the industry. We have started testing electric technologies for excavators, dump trucks, material handlers and forklifts. Advancements in technology can certainly improve the market for construction equipment and at Sany, we are taking adequate measures to power our machinery and equipment with renewable energy sources and put forward the strategy of “electrification”.

As the nation is ushering in new emission standards, we have

successfully embraced the Bharat CEV Stage IV norms and upgraded and launched our motor graders and truck cranes into the market. Moreover, biodiesel as a vehicle fuel can improve fuel lubricity, increase energy security and improve air quality. Biofuels in India are of strategic importance as they augur well with the government's ongoing initiatives, such as Make in India, Swachh Bharat Abhiyan, skill development, etc. Our cranes currently being used at various locations are effective in regulating and decreasing emissions and our customer feedback has also been very encouraging. We expect the demand for such machines to surge in the days to come, hence we plan to launch more new products complying with CEV stage IV emissions in the coming months.

Since our foray into India, our focus has been to make the best quality machines that rank high in productivity and versatility, but now it is also important to make our machines smart. Our R&D team puts a lot of effort into applying telematics to machines to make them smarter

and help protect our environment. We believe that the future will see a demand for electric and autonomous machines that will reduce our impact on the environment, and increase sustainable performance and efficiency. The outlook for the construction equipment industry is largely positive, including the rental market space. The rental market demands the equipment to be reliable as well as flexible in terms of applications.

## Conclusion

Being an economic driver, the infrastructure sector will naturally be the focus of our government. The good news is this momentum is likely to continue, and we will see the industry getting more and more competitive. However, the need of the hour is to become environmentally responsible. In this regard, we are extremely proud to say that SANY embraces new technology for:

- Greater efficiency, increasing sustainable performance.
- Reducing our impact on the environment
- Building smarter machines
- Creating new energy production
- Delivering increased performance

The whole world is waking up to the fact that innovation and intelligent solutions can pave the way for a brighter and greener tomorrow. The construction equipment industry is certainly not far behind in this quest. If Sany has proved that quality can change the world, then it is certainly not a tall claim when we declare our company has a clear-cut strategy in place to create a safer and better tomorrow!



Sany product on display at bauma CONEXPO.



**ABOUT THE AUTHOR:**  
Dheeraj Panda is COO (Sales, Marketing and Customer Support) at Sany Heavy Industry India, a leading construction equipment manufacturer in India.



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# THE FUTURE IS ELECTRIC!

Epiroc is building an energy efficiency culture resulting in lower CO<sub>2</sub> emissions and more efficient use of resources.



Innovation is also one of the core values of Epiroc and we always believe that to be in the business, we need to be the pioneer in innovation. The world is changing, and we are on a mission to be at the forefront of exciting innovations in the mining industry. We adapt to the times, giving our customers what they need to get the job done safely and efficiently. This means thinking ahead and offering solutions that reduce operating costs and improve health and safety. All while helping the environment where we work and live!

Epiroc also works in accordance with the Paris agreement for climate change and our 2030 sustainability goals for people and the planet are set keeping in

mind our commitment to this agreement. We have an ambitious goal that by 2030 we will halve our CO<sub>2</sub> emissions in our activities related to operations, transport, products, and our suppliers. We are building an energy efficiency culture resulting in lower CO<sub>2</sub> emissions and more efficient use of resources.

One of the ways we can provide sustainable solutions to our customers is the electrification of mining equipment, in particular, underground mining equipment. Epiroc has put in a lot of resources in developing technologies that help us design and produce such equipment.

Epiroc's battery electric vehicles (BEVs) are designed to offer the highest safety and productivity with a limited

amount of maintenance. The high energy density batteries are certified to international standards and offer several charging options and are easily swappable for continuous loader and truck operations. This allows machines to operate uninterrupted and a simple battery swap can boost output, right when you need it!

The best part is, these battery-powered equipment are no less than conventional equipment and deliver the same or even enhanced performance. In fact, we get additional advantages in terms of the cost of ventilation as the equipment does not emit any smoke in operation, we provide hassle-free battery changeover that is magically so quick





**These battery-powered equipment are no less than conventional equipment and deliver the same or even enhanced performance.**

that you literally don't feel any hurdle in operations. The information management system of battery-powered equipment is informative and easy to understand and suggests your required actions from time to time.

The operators and crew working underground can see the benefits of a healthier underground working environment first-hand. The customers see a huge benefit in terms of service needs for battery-powered equipment.

So, it is not only the new equipment that comes with battery power we also support battery conversions for older equipment that is running with our customers and these conversions are a major cornerstone in their journey towards electric underground mines. Conversions are cost-efficient and utilise the full potential of the low total cost of ownership (TCO).

We offer short turnaround time in parallel with high performance. The conversion is included in a midlife rebuild, returning your equipment

to maximum productivity and operating efficiency – including the addition of thousands of new hours with low emissions.

We also provide BAAS (battery as a service) as an option to our customers and in this case, customers need not worry about the life of the batteries and change interval. We work with customer teams to define a plan to meet the battery requirement. With BAAS, we eliminate the risk of owning batteries and provide all the benefits of electrical power. We take full responsibility for keeping the battery serviced and running to optimal capacity from certification to maintenance and technology upgrades. A true trouble-free model of operations – just subscribe to the services and get peace of mind. With batteries as a service, the function and reliability are always guaranteed, and our customer can focus their energy on what matters – increased productivity!

These machines with their innovative design features and

predictable maintenance have the power to match or surpass the performance of traditional diesel equipment. They use 70 per cent less energy and produce 70 per cent less heat than a diesel engine-powered machine with lower ventilation costs, increased productivity, and greater overall operator satisfaction.

This is a power change that changes everything and that's why we say – the future is electric!



#### ABOUT THE AUTHOR:

**Amit Randive** is Business Development Manager at Epiroc Mining India. With over 19 years of experience in various fields like aftermarket, plant operations, maintenance, operations, project and contract management, etc, he has been an integral part of the organisation, driving growth and advancement. His vast experience, technical knowledge and leadership skills coupled with his innovative and structured approach, has helped Epiroc foster an impeccable forward curve in the development of Telematics and automation products. Currently, he drives business development in all divisions with synergy.



# INNOVATION TO ACHIEVE EXCELLENCE

Our success mantra has been the tenacity and hard work of our team, coupled with our focus on satisfying customers' real needs, along with our ability to offer the right product, at the right price, with the right service support, says **Sorab Agarwal**.

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**R**ugged, dependable, and cost-effective – these words elaborate the strength of ACE's (Action Construction Equipment) as well as our products.

ACE is India's leading material handling and construction equipment manufacturing company with a majority market share in the mobile and tower cranes segment. We have a consolidated presence across all major infrastructure, construction, heavy engineering, and industrial projects across the country. ACE is among the most awarded companies in the construction equipment sector for its value for money and innovative products, quality and timely service, customer satisfaction, and CSR practices.

## 25 years and running...

We completed 25 years in January 2020, and these years have been full of hard work, struggle, and excitement, which eventually has us feeling satisfied and proud. The team faced all odds and hardships over the years to only become stronger and better. A start-up in 1995, 25 years hence, we have made our mark as India's No. 1 crane manufacturing company.

We started as a pick-n-carry crane company 25 years back, but over the years, we have evolved into a major construction equipment player in the country. Today, our range includes not only next-gen cranes but also truck cranes, crawler cranes, tower cranes, loaders, vibratory rollers, graders, forklifts, and agriculture machinery.

The mantra of our success has been the tenacity, hard work, and dedication of our team, coupled with our focus on satisfying customers' real needs, along with our ability to offer the right product, at the right price, with the right service support. We also pride ourselves on our committed and honest relationships.

## Adding value

All our products are designed for tough Indian operating conditions and ruggedness is an intrinsic design element. It has always been our endeavour to make dependable and reliable products. In fact, the culture of honesty, reliability, and dependability permeates the culture of our company.

Value for money would define the



word 'cost-effective' for us and we have always ensured to provide our customers with value-for-money products so that they are able to increase their productivity and profits by using our machines.

ACE equipment is used throughout the country and to cater to this widespread and to provide effective pre-sales and after-sales service, the company has developed a network of dealers and area offices operating out of 100 locations and supported by 15 area or regional offices based in Delhi, Mumbai, Chennai, Kolkata, Ahmedabad, Pune, Jaipur, Raipur, Bhubaneswar, Lucknow, Indore, Hyderabad, Bengaluru, Vizag, and Cochin. These offices are in turn supported by the marketing headquarters and a dedicated product support division based in Faridabad. We also have an exclusive toll-free service for our clients, where they can give us a call 24x7 for any complaint and it will be attended to within 24 hours.

Most of the spares including the critical ones are stocked at our dealer points so as to ensure seamless support. We conduct operator training on a

regular basis at our training centre in Faridabad. Regular periodic training courses have been conducted to enhance operator and engineer skill levels. Also, we offer 15 days of free training to every new customer. We cover all the aspects related to the operations and safety of the machine.

### Innovation at the fore

ACE has always believed in innovation to achieve excellence. The group has introduced new technologies and new models across its product range at a phenomenal pace.

Research and development (R&D) has been one of the key elements in our success story and our in-house R&D centre is duly approved by the Government of India. Over the years, the speedy commercialisation of world-class designs and technologies in our company has been instrumental in making us the largest crane company in India.

All our products are designed in-house, keeping Indian operational and market conditions in mind. The USP of our product is that with appropriate design, we are able to also control the costs to cater to benefit our



customers.

Our R&D centre has played a significant role in the growth of our organisation over the last decade. The Covid months have given us an opportunity to focus, for the time being, on the R&D activities which involve the design and development of new products, upgradation of existing products, and VA/VE activities wherever possible. We are spending greatly on our R&D and on enhancing the customer experience and engagement with the product.

This also includes digital empowering of our internal and external operations to create a more efficient organisation.



ACE's backhoe loader on display at bauma CONEXPO.



#### ABOUT THE AUTHOR:

Sorab Agarwal is Executive Director, ACE (Action Construction Equipment). A veteran with almost two decades of experience in the construction equipment

industry which touches all the sectors of infrastructure, he has steered the company to the No. 1 position in its major product segment – cranes.



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# ELECTRIC CONSTRUCTION MACHINERY ON THE RISE

Electric machinery often requires less maintenance and has a longer lifespan compared to its diesel counterparts, making them a more cost-effective solution in the long run.



The off-highway tyre segment in India is evolving, driven by the growth of the construction, mining, and agriculture industries. The increasing demand for larger and more specialised vehicles in these industries has created a demand for OTR tyres with specific features and performance characteristics. There have been various technological advancements and innovations integrating the OTR tyre segment. The OTR tyre companies are focused on researching and developing newer and better technology tyres to keep up with the technologically advancing

OTR machinery sector.

The Indian government's focus on infrastructure development and the growth of the rural economy has also contributed to the growth of the OTR tyre market in India. The government of India has been undertaking various infrastructural projects like building airports, highways, national highways, ports and docks. India has committed to becoming a \$5 trillion economy by 2025 and infrastructural development will play one of the biggest roles to fulfil this mission.

According to India Brand Equity Foundation, the overall infrastructure

CAPEX in India is estimated to grow at a CAGR of 11.4 per cent over FY21-26 driven by spending on water supply, transport and urban infrastructure.

With infrastructural development, the Government of India has also had a strong focus on sustainable development and practices. In the past few years, the EV industry has been evolving with increased investment in the sector and India's mission to reduce carbon emissions.

Sustainability has been playing a major role in shaping the future of the world and with various industries



recognising the importance of building sustainable practices, it has been one of the major focuses across industries. The construction machinery manufacturers are also moving towards building sustainable practices and introducing processes that would help move the segment towards a more sustainable future. Various companies are designing new business models to make e-mobility technology viable and available within India at affordable rates.

The increased focus of the government on sustainable construction practices and energy efficiency is one of the reasons why the construction sector in India is seeing a rise in e-mobility technology.

### Factors contributing to the growth of e-mobility

The adoption of EV technology within the construction industry has other factors as well. One of the key benefits of electric machinery is its lower emissions compared to traditional diesel-powered equipment. This will be highly beneficial in reducing the carbon footprint of construction sites.

Electric machinery often requires less maintenance and has a longer lifespan compared to its diesel

counterparts, making them a more cost-effective solution in the long run. In addition to developing EV excavators and loaders, there has also been a rise in the use of electric cranes, bulldozers and material-handling equipment. These machines offer a high level of mobility and efficiency. E-mobility-focused companies in India are also focused on developing better battery technology.

### Need for customised tyres

Tyres are an important factor in any vehicle, enabling a vehicle to move forward with proper efficiency. Electric vehicles have specific requirements for their tyres mainly due to the differences in weight distribution, braking behaviour, and acceleration compared to traditional gasoline vehicles.

Customised tyres for EVs are designed to handle the unique demands of these vehicles, providing improved performance, longer lifespan, and better fuel efficiency. These tyres are optimised for low rolling resistance. Additionally, they may also have specialised tread patterns and materials to enhance grip and handling, especially during high-speed and hard braking conditions, ensuring the safety and stability of the vehicle.



**E-mobility solutions within the construction industry are inevitably on the rise and have specific tyre requirements.**

Within the construction industry, the roads are not always smooth and the machinery needs to be able to carry heavy loads. Customised EV tyres can also have unique tread patterns that can not only sustain rough terrains and weather conditions but can also handle heavy loads. This might help receive the most efficient output of the e-mobile machinery and increase the tyre life.

E-mobility solutions within the construction industry are inevitably on the rise and have specific tyre requirements. It is essential for the machinery and tyre manufacturers to step into this landscape and design e-mobile machinery and EV-friendly tyres to ensure the best output of these machinery and to help the construction industry build a sustainable process design.



**Tyres are an important factor in any vehicle, enabling a vehicle to move forward with proper efficiency.**



#### ABOUT THE AUTHOR:

**Ashok P Chhajjer** is Sr. General Manager – OE Sales, (Domestic Market) at Balkrishna Industries (BKT Tires), a leading manufacturer in the off-highway tyre market.



# TOWARDS A GREENER FUTURE

Developing businesses are treating “sustainability” as the crucial goal of their method and operations to escalate growth and to compete in the global market, writes **Rajesh Nath**.

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A huge number of developing manufacturers are figuring out sizeable economic and environmental advantages from sustainable commercial enterprise practices. Sustainable production is the advent of manufactured merchandise via economically-sound strategies that decrease negative environmental influences at the same time as conserving energy and natural resources.

Developing businesses are treating “sustainability” as the crucial goal of their method and operations to escalate growth and to compete in the global market. This motive now consists of many outstanding corporations throughout many distinct industry sectors. In many cases, those efforts are showing positive results.

These companies have taken up a zero-waste plan and committed to recycling to become more environmentally responsible. Their plans to grow towards sustainability entails the usage of energy-efficient products, the usage of sustainable/ recycled materials for manufacturing, and also the reduction of carbon emissions overall.

Extending our support to companies who are adopting sustainable practices is a start in giving back to the environment. Apple has initiated the usage of aluminium over other materials to mitigate emissions and twenty-three partners of Apple have a 100 per cent commitment to renewable energy. It is commendable how Google is consistently ahead in its game as its data centres use 50 per cent less energy than most others in the

same line, and over 90 per cent of their all-around waste is diverted from landfills. Similarly, Ikea has 91 per cent of its waste transformed into energy through recycling or incineration.

Researchers have estimated the impact of emissions from the construction industry would mostly be dependent on embodied carbon by the year 2050. In the interest of reduction of carbon emissions comes the usage of renewable fuels, and biodiesel holds an important appeal here, performing the same as diesel in cold weather and can be treated for winter use in the same ways, even though it is not as fuel efficient. Biodiesel should be viewed as an integral component of a national energy policy that increasingly relies on clean, domestic, renewable fuels.

Each renewable fuel category, relative to the petroleum fuel it





replaces, emits lower levels of greenhouse gases (GHGs). But greenhouse gases are not our only concern when we talk about the construction industry. Besides greenhouse gases, the prevalent methods of production in the industry have a massive contribution to landfill wastes and harmful pollutants that exert a significant impact on the natural ecosystem.

On average count, over 80 per cent of people spend their lives indoors, and unlike general consideration, the concentration of pollutants per unit volume of air is higher indoors than it is out in the open. Poor design of ventilation systems in buildings, and off-gassing of the toxic chemicals in the same buildings, contribute to it as a whole. Products need to be engineered with a lower per unit carbon count and incorporation of alternate building materials too so that the harm rendered upon living beings, as well as the environment, is mitigated. The manufacturers need to take action towards eliminating the industry's carbon pollution. It should begin with technical innovations internally to mitigate the generation of pollutants of all kinds, and the upgradation of facilities in the production unit(s) to maximise energy efficiency.

Fortunately, the present market values strength efficiency in energy utilisation more than it ever has. Almost all producers condone the usage of machinery running on the fuel being aware of the increasing importance of energy efficiency in the current climate- how it is nothing but the greatest investment they can make to reap long-term benefits for their consumer base. Over time, energy efficiency has become the pivotal principle of many production strategies. Even buyers of residential as well as commercial buildings demand environmentally efficient and sustainable design in the products

even if they have to increase their cost margin. People are willing to cut fuel costs to acquire greater efficiency keeping their business minds true to the long-term benefits and escalation in production efficiency. Reduced pollutants and mitigation of emissions go hand in hand.

As mentioned, environment-friendly strategies of production are now being taken up widely, even if it entails increasing the costs marginally so as to ensure sustainability. But what if, to balance it out, there was a way to reduce the costs elsewhere? Maintenance of the huge machinery surely takes up a chunk of the cost margin. However, better technology and innovation might help us mitigate the same.

We are talking about the usage of electric construction machinery which not only reduces maintenance costs as compared to heavy machines but also significantly contributes to the reduction of fumes, unwanted loud noises, energy costs, harmful emissions, and so on, enabling the business to put a step forward towards sustainability. Also, recharging would be much more efficient and less tedious. What else would we want other than a reduction in our costs and consequently contributing to the betterment of the environment that sustains us? If auto-emissions regulations are any guide, cities can implement such rules to help push the industry toward greener gear.

The global compact electric construction equipment market was valued at \$46.15 billion in 2021 and is expected to expand at a compound annual growth rate (CAGR) of 13.5 per cent from 2022 to 2030.

The sector is witnessing a growth boom because of the escalation in the demand for compact construction equipment due to increased demand in housing and the expansion of manufacturing plants! As construction

activity increases rapidly, the rental equipment market also witnesses a strong demand for the same. Upon looking at the trends during Covid-19, the challenging times have always given way to counter the growth in the equipment rental industry- transformation and reinvention for good. As per market reports (revised during the Covid-19 situation), the construction equipment rental market in India and in the ASEAN, region is expected to see major growth during the forecast period 2020-2025.

The global construction equipment rental market is expected to register a CAGR of about 4.78 per cent during the forecast period. Although the higher interest rates tend to drive away the investors, and it might affect the overall construction projects- equipment, chips and resource shortages, supply chain difficulties, labour shortage, and so on – it is the consumer demands that have been and would be driving up the demand and hence the economy of the market. The Make in India campaign is expected to prove to be a catalyst for the previously slumped market and set it on a growing trajectory.

With a growing economy and an ever-developing industry like India, we must relentlessly channel our efforts toward building a sustainable and healthier world, to leave something behind for the next generation of businesses to grow. With each of our little contributions, we might make a significant impact since no effort is small.



#### ABOUT THE AUTHOR:

**Rajesh Nath** is Managing Director of VDMA India. He has more than 32 years of experience working in various industries in Germany and India. He has been accorded the "Cross of the Order of Merit" – the highest civilian award from the German President, for promoting Indo-German Trade in the engineering sector.



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# THE RISE OF AUTOMATION IN CE INDUSTRY

In recent years, the industry has embraced automation as a way to increase efficiency, reduce costs, and improve the quality of its products.



The manufacturing business has undergone gradual change over the past several decades, and the construction equipment sector is no exception. Considering the increasing demand for equipment in infrastructure building, the lack of skilled labor has quite often been an obstacle impeding the growth of the industry. Leveraging automation and other technologies for the manufacturing process is an alternate solution that solves many problems in one go.

As Industry 4.0 is being integrated into the Indian construction sector, it has also influenced industry players in their outlook towards a conception of equipment, design, and functionalities as well as the manufacturing process. Integration of IoT and data analytics in

equipment and the usual processes have helped make systems more efficient and productive.

In recent years, the industry has embraced automation as a way to increase efficiency, reduce costs, and improve the quality of its products. Automating multiple aspects of the manufacturing process has helped manage rising demand, improved efficiency and saving costs. Welding, painting, and assembly are a few examples of monotonous, dangerous, or highly precise operations that are now handled through robotics.

Additionally, to tackle the labour issue, manufacturers commission automated guided vehicles (AGVs) and mobile robots related to material handling and transportation, manufacturers. The application of

computer-aided design (CAD) and computer-aided manufacturing (CAM) technologies is another method of implementing automation. These technologies enable the fabrication of automated components and 3D models of machinery, cutting the time and expense of generating parts and minimising mistakes.

The industry also increasingly utilising sensors and the Internet of Things (IoT). With the use of sensors, equipment performance may be tracked and problems or malfunctions can be found, which enables proactive maintenance and helps decrease downtime. IoT technology can be used to connect machines and equipment, providing real-time data that can be used to optimise operations and improve efficiency.





**Telematics in construction equipment involves the use of sensors, GPS tracking, and other technologies to monitor and transmit real-time data about equipment performance, location, and usage.**

At CASE Construction Equipment, the manufacturing, research and designing process are both aided by automation on various levels. Our Pithampur facility is designed with cutting-edge automation technologies to manufacture superior-quality products. The automation includes robotics welding which gives welding joints superior strength and robustness. This helps in the repeatability of the same welding, minimises human error and maintains consistency in quality. Our ultra-modern paint shop uses both Manual and Automated Paint operations providing aesthetically appealing products. It also boasts eco-friendly next-gen technology ensuring that the paint lasts longer. Additionally, we use automation in laser cutting, gas cutting, and in our machining centre.

The use of data analytics, artificial intelligence and machine learning further assists in the manufacturing of construction equipment. At a group level, CNH Industrial, our parent company has recently inaugurated the India Technology Center, specifically to use new tools for RD and collaboration with CNH global team. This includes tech tools like Cloud, VR, SW, Electrification, Autonomous, Advance

Analysis, Simulation, Automation, and Mechanical & Electrical design, etc. Technologies such as these help in efficiency and dexterity in the industry.

For optimal efficiency and user-friendliness, we strive to offer machines that are of the highest quality possible. We constantly upgrade the technology in our user-friendly, fully-equipped devices to reduce downtime for our clients. We are advancing the industry 4.0 strategy, which unquestionably aids in the expansion of our brand.

Manufacturing is just one process that automation has enhanced for the construction equipment industry. More importantly, the product themselves are going through a transition of becoming increasingly automated. These machines have the ability to function remotely and autonomously, made feasible by the incorporation of cutting-edge communication and artificial intelligence technology within them. Cranes, excavators, and trucks—which are widely used for numerous construction activities—can all be equipped with automated technology. The remotely operated function of automated construction equipment may keep workers safe in dangerous work conditions.

The demand for automated

construction equipment is being fueled by the accessibility of numerous automation technologies. It is also bolstered due to the fact that automation also increases equipment efficiency and removes the need for human involvement during operation, lowering the overall cost of the construction project. It is anticipated that this will increase demand for automated construction equipment over currently available equipment.

In India, we are already seeing the integration of automated technologies like Telematics and IoT in construction equipment to give customers real-time data about the performance and operation of their equipment. Telematics in construction equipment involves the use of sensors, GPS tracking, and other technologies to monitor and transmit real-time data about equipment performance, location, and usage. Sensors gather this information, which is then sent across a wireless communication network to a central server. Software programmes are then used to evaluate the data in order to provide information about the fuel usage, maintenance requirements, and productivity of the equipment. The benefits of telematics include improved equipment efficiency and productivity, reduced downtime, proactive maintenance, and optimised equipment utilisation.

As the industry progresses, it is expected to have increased integration of technology with wider integration of IoT, data analytics, and machine learning in the processes as well as equipment. This will significantly improve the safety, productivity, quality, and cost aspects of the industry.



**ABOUT THE AUTHOR:**  
Puneet Vidyarthi is Head of Marketing & Business Development - India & SAARC, at CASE Construction Equipment.





# RENTAL INDUSTRY PREPARING FOR A BRIGHT FUTURE

India has nearly \$2300 million worth of construction equipment sold every year, out of which 7 to 8 per cent is sold to rental companies, writes **Mukesh Sharma.**



**A**tlas Copco Group has always been ahead of the curve when it comes to innovations, culture, the vision of the future, and now sustainability. This spirit to remain a market leader has been a key driving factor and has been adopted by the entire organisation – be it divisions, sub-brands, and even its employees. With a momentous milestone of completing 150 glorious years in business, the Swedish megabrand has only not only become stronger over these past decades but also more agile,

better focused, and intuitive when it comes to profits, people, and our planet.

Atlas Copco Specialty Rental has taken a page out of its book and is inspired to think big and go beyond, answer crucial questions, and find solutions to complex challenges our industries and societies face, not just today but also in the future.

Over the last decade, the rental industry landscape has seen many dynamic shifts, both in terms of technology as well as innovation. While the construction and mining industry would use more diesel engine-driven

equipment traditionally, electric machines have now started taking the spotlight and we have designed products with sustainability in mind. We have developed solar-powered light towers, E-Air electric mobile compressors, ZenergiZe energy storage range, etc.

At Atlas Copco Specialty Rental, we have earmarked these evolutionary trends, identified micro and macro-opportunities, and designed groundbreaking solutions to overcome hurdles, achieve goals, and engineer change. This is clear from the number





of projects we have spearheaded such as the world's largest refining hub in India, strategic crude oil storages, off-shore - deep sub-sea pipeline, construction of mega fertilizer plants, production of ventilators during Covid to an Indian government entity, supporting major vaccine players during an emergency for production of vaccines.

Our key operational strategy has always been two-pronged. It is not just the rental equipment but also the expertise of our people, that makes all the difference to our customers. We cater to a broad spectrum of industries – from energy, and oil and gas to power, manufacturing, automobile, construction, and many more. If we were to closely understand the rental business in India, and zoom into the construction industry in particular, we see a lot of scope.

Rental is a capital-intensive business and most of this investment goes into the rental fleet. The compressor rental market is currently unorganised, fragmented, and scattered, with very few major players having a significant presence across the country. There are hundreds of small rental companies operating across India, and these companies are now diversifying. Gradually and eventually, rental companies are evolving instead of cutting the corners or compromising on the quality of fleets they are investing in energy-efficient technologies. The industry faces the concern of low rental penetration. This is because the number of organised players with large rental fleets is limited. This issue can be tackled by changing the mindset.

Atlas Copco Specialty Rental has also played an instrumental role in bringing a mind shift for clients. Earlier, the rental would be limited to leasing out machines and equipment. We have invested heavily in technology and manpower to turn this supply-demand transaction into a solution-based approach.

The ethical way of doing business is the foundation of everything Specialty Rental does, irrespective of where we operate in the world. And under this, we have committed to creating a proactive drive towards sustainability, improving and strengthening business practices, and offering a sharp focus on building and maintaining trust, transparency, and integrity with our clients, our employees, and our key stakeholders.

Our commitment to sustainability and corporate responsibility is reflected in all of our policies and practices. Being loyal to this cause builds a culture of responsibility and trust, where taking ownership throughout the value chain is fundamental to our success and a way to drive real lasting impact. Building on decades of sustainability reporting, our journey began by marking progress on environmental, social, and governance goals aligned with the UN's Paris Agreement.

We have an approved science-based target to reduce the emissions from our direct operations, such as manufacturing, vehicles and offices, and from the energy we use. We aim to reduce these emissions by 46 per cent by 2030, compared to our 2019 baseline. We also have an approved target to reduce our value chain emissions, mainly the carbon impact of our products in use, by 28 per cent by 2030, compared to our 2019 level of emissions.

If we talk about the future for rental in Indian market, we are optimistic about it. This largely comes from the fact that India is seen as the fastest-growing economy in the world and is on its way to becoming the third-largest construction market globally. The infrastructure is a key driver for the economy as it is this sector that is confident in propelling India's overall development and also receives undivided attention from the Government for developing crucial policies that would ensure strict

adherence to time and quality, maintaining high standards, and offering world-class infrastructure.

This sector includes power, bridges, dams, roads, and urban infrastructure development and even though construction equipment leasing is still in a growing phase and accounts for 6 to 8 per cent of the overall construction equipment market, there are many indications that there is soon going to be a turning point in this data.

Rapid urbanisation and development are pivotal to its growth. This will directly affect the growing economy, bringing more opportunities for the construction business. The equipment leasing business is a widely recognised business sector in which suppliers and other professionals can rent out unused or idle equipment to other contractors and professionals. Smaller companies that are short of capital cannot buy construction equipment because of the small volume and uncertainty of projects. So, to have optimisation of cost and time, leasing this equipment is done to small or medium construction companies. And the percentage of such names is higher.

Conclusively, India has nearly \$2300 million worth of construction equipment sold every year, out of which 7 to 8 per cent is sold to rental companies. The current scenario allows focus on regional areas for construction, giving the rental business an organised way of working, and is expected to grow year on year in days to come in India.



#### ABOUT THE AUTHOR:

**Mukesh Sharma** is Country Manager of Atlas Copco Specialty Rental. He keeps a close eye on the shifting market trends and studies the undercurrents of the dynamic rental business closely. It is his passion to lead his entity with knowledge and commitment, offering deep insights and a clear vision, helping India emerge as a leader in the construction industry, opening up newer, and bigger avenues in the future.



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# PROGRESSIVE OUTLOOK FOR THE INDIAN CE INDUSTRY

AF will be a fair play for the future of the CE industry as the Govt is also pushing the same for making India self-reliant, writes **Sameer Malhotra**.



**C**onstruction equipment is the core of infrastructure development in India because no construction activity is possible without these heavy lifters. With the Union Budget 2023-24 focusing even more on infrastructure development in the country, the demand for Construction equipment is expected to see a boost in the coming years. However, many questions concerning sustainability, alternate fuels, electrification, and rental businesses correlated to the Indian construction equipment industry lay unanswered. Let's dive into the current status of these prospects and how they can evolve the construction equipment industry in the upcoming years.

## Sustainability with Alternate Fuels

Today, almost all construction equipment runs on diesel fuel, a refined component of crude oil. Diesel is the most efficient non-renewable fuel for heavy engines across all construction equipment. However, diesel's harmful emissions are the major cause of some respiratory diseases in humans and global warming in general. High emission levels and limited fossil fuel reserves render diesel-powered machines non-sustainable in the long run.

In my vision, alternative fuels will be a fair play for the future of the construction equipment industry as the Government is also pushing the same for making India self-reliant. With

bio-diesel, compressed natural gas (CNG), liquefied natural gas (LNG), hydrogen, ethanol and electricity, construction equipment manufacturers have many alternative fuel options for new designs of machines leading to greater sustainability in the long run. Since Construction Machines are employed at a single site, refuelling them with alternative fuels right at the work site will be much easier for the owner or the aggregators.

## Electrification of construction equipment

While progressing towards inexpensive alternative fuels, manufacturers are also pushing for electricity-powered machines because electric vehicles are considered the





epitome of technological progress. Electric vehicles offer zero harmful emissions, futuristic design, low running cost, and next-gen technology. Around the globe, many models of electric equipment are showcased with artificial intelligence for higher safety and efficiency. As a new beginning to the electric saga, manufacturers are now showcasing and launching new electric Excavators with enough battery capacity to last one construction shift of eight hours. These electric machines will drastically reduce the running cost and need for frequent maintenance, decreasing downtime and enhancing productivity.

This progress will reduce the harmful emissions at the construction sites of the future thus improving the working conditions for the workers. Electric machines offer lower running costs and have the potential for better returns. Thanks to the new initiatives by the manufacturers in the construction equipment industry, the sustainability quotient will reach a whole new level.

### Evolving rental businesses

As the Indian economy is moving towards new heights, more people are entering small to medium-scale businesses. Among these businesses is the rental of construction equipment. The requirement of heavy capital for starting a rental business of construction equipment pushes the owners to look for used construction equipment. However, the sales of new machines will also see a boom thanks to the Government's efforts towards infrastructure development. Speaking about new construction machines, a fleet of diesel machines would require lower initial capital than electric construction machines. The availability of equipment running on alternate fuels will help rental businesses to diversify their fleet and reduce net carbon emissions.

The construction equipment market is expanding annually and so is the used construction equipment market. At present, for every sale of a new construction machine, a used construction machine is sold depicting the size of the pre-owned market. The pre-owned market is expected to grow steadily in the future because used construction equipment provides far greater value when compared to new equipment. Hence, rental business owners of construction equipment are more likely to buy used diesel machines instead of new ones.

Shriram Automall India (SAMIL), an ISO 9001:2015 certified company, is India's largest Phygital pre-owned marketplace and offers a one-stop shop for all the needs of used construction equipment for different applications. SAMIL began its journey in 2011 by setting up India's first professionally managed and organised auction platform for buying and selling pre-owned cars, commercial vehicles, construction equipment, farm equipment, three-wheelers, two-wheelers, etc.

The used construction equipment market is still highly unorganised. However, organised players like Shriram Automall India have played a significant role in making it organised throughout the last 12 years. At present, the market share of organised players is around 20 per cent against the unorganised ones which has doubled from just 10 per cent a decade ago.

We are backed by CarTrade Tech and Shriram Finance, and operate more than 120 automalls across India where customers can visit, inspect and bid for their choice of construction machine. With thousands of auction events conducted every month, we provide plenty of opportunities to our buyers with multiple bidding modes such as Physical, Online and Phygital (Physical + Digital) through our automalls, online and mobile applications



respectively. We provide inspection and valuation services of vehicles and equipment through Adroit inspection services and innovative car buying and selling experience through BlueJack. Our ThePriceX application is powered by artificial intelligence and statistical modelling for delivering precise prices of used vehicles and equipment from any source and geography in India.

### Conclusion

Moving towards the closure, I would say that it is high time that the construction equipment industry does the research and development of new-age machines running on alternate fuels that the Government is mulling over apart from going fully electric. Higher efficiency is the first thing new customers will look out for and is only possible through cutting-edge technologies. Furthermore, there is a high requirement for better features and advanced tech in the new construction machines that would give its users better productivity and ultimately higher returns.



#### ABOUT THE AUTHOR:

**Sameer Malhotra** is CEO, Shriram Automall. With over three decades of experience, he has built a strong foundation for the company since 2011.

Under my leadership, Shriram Automall India has become as the most trusted brand for the exchange of pre-owned automotive, equipment, gold and property.



# INFRA DEMAND BOOSTING RENTAL MARKET

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The demand for infrastructure development has been a major driver of the growth of the equipment rental market.



**T**he infrastructure development sector has been booming in recent years due to the government's major push for the infrastructure sector, and as a result, the demand for equipment rental services has also seen significant growth. Equipment rental is a cost-effective alternative to purchasing, and it provides an access to a wide range of machinery and equipment needed for their operations. Let's have a closer look at the reasons why the infra demand is boosting the equipment rental market.

**Cost-effectiveness:** Purchasing heavy machinery and equipment can be extremely costly especially due to recent emission norms and inflation

machinery prices have gone up by 20 per cent due to which construction companies need not have to worry about the high upfront costs of ownership. This cost-effectiveness has made equipment rental a popular option for companies in the infrastructure development sector.

**Easy access to the latest equipment and technology:** The equipment rental market provides construction companies with access to the latest equipment and technology. This means that companies can complete their projects with the best possible equipment, without having to worry about the high costs of purchasing the latest machinery. Allowing them to make informed

decisions on rent or buying.

**Reduced maintenance costs:** When a company rents equipment, they are not responsible for the maintenance and repair costs of the equipment. This is purely the responsibility of the equipment rental company. This reduced burden on the company frees up resources and allows them to focus on their core business operations and activities. Renting a machine also reduces logistics, manpower, and storage costs.

**Increased productivity:** The right equipment can have a significant impact on a company's productivity. Equipment rental companies have access to the right equipment for each job, ensuring that they have the machines they need to complete their projects as efficiently as possible. This increased productivity can have a significant impact on a company's bottom line, as well as its ability to take on more projects.

In conclusion, the demand for infrastructure development has been a major driver of the growth of the equipment rental market. Companies in the construction and engineering industries are turning to equipment rental services for their cost-effectiveness, access to the latest equipment, reduced maintenance costs, and increased productivity, it is likely that the demand for equipment rental services will continue to grow in the coming years. In the past five to six years, rental penetration has grown multi-fold and is now close to over 40 per cent which was merely five to





ten per cent six years back. The Construction Equipment Rental Association (CERA) played a vital role in increasing penetration with the right awareness and advocacy.

The use of electric construction machinery is rapidly increasing in the construction industry, as the demand for more environmentally-friendly and sustainable solutions grows. This shift is driven by several factors, including government regulations, increased awareness of the environmental impact of traditional diesel-powered equipment, and advancements in technology.

One of the main advantages of electric construction machinery is its ability to reduce emissions and improve air quality. They are powered by batteries and produce zero emissions, making them ideal for use in urban areas where air quality is a major concern. Additionally, electric construction machinery operates more quietly than traditional equipment, which is especially important for use in residential areas.

Another advantage of electric construction machinery is that they are more cost-effective to operate in the long term. While the initial purchase price of electric equipment may be higher, the cost of electricity is significantly lower than the cost of diesel or gasoline. Additionally, the maintenance costs of electric construction machinery are lower, as they have fewer moving parts and are less complex than traditional machinery.

Despite the advantages of electric construction machinery, there are also some challenges that must be addressed. For example, the limited range of battery-powered equipment may make them less suitable for large-scale construction projects that require machinery to be used over long distances. Additionally, there may be infrastructure challenges, such as

a lack of charging stations, which can limit the widespread adoption of electric machinery.

Despite these challenges, the trend toward electric construction machinery is expected to continue to grow in the coming years. This is due to the many benefits they offer, including improved air quality, lower operating costs, and reduced carbon emissions. As the technology continues to improve and the infrastructure to support it grows, the use of electric construction machinery is likely to become even more widespread in the construction industry.

Recently at the bauma CONEXPO India exhibition, many manufacturers and OEMs launched their first hybrid and electric models, which was a delight of an event. We can see an upcoming trend shift to electric and hydrogen-powered trucks and equipment. Much awareness is needed in terms of Research and development of battery-powered construction equipment as the machines are heavy earthmoving machines. Battery backup, charging, and swapping are other challenges as majorly the equipment operates in remote locations. With the right deliberations amongst stakeholders and government bodies, India will soon have an electric revolution.

Biodiesel is a clean-burning, renewable fuel that can offer numerous benefits to the construction equipment industry. In recent years, the demand for biofuels has increased as the world strives to reduce its carbon footprint and become more environmentally conscious. The construction equipment sector is no exception, and many companies are exploring the use of biodiesel in their equipment as a way to reduce emissions and lower their carbon footprint.

One of the main benefits of biodiesel is that it is produced from

renewable resources, such as vegetable oils and animal fats, making it a sustainable alternative to traditional diesel fuel. Additionally, biodiesel has a lower carbon content than traditional diesel, leading to lower greenhouse gas emissions and improved air quality. The use of biodiesel can also reduce a company's dependence on foreign oil and promote domestic energy production, helping to boost local economies.

Despite these benefits, there are still some challenges associated with the use of biodiesel in construction equipment. For example, biodiesel can be more expensive than traditional diesel, which can be a barrier for some companies looking to make the switch. Additionally, some concerns have been raised about the quality and performance of biodiesel in various engine and weather conditions, which can impact its ability to perform in extreme conditions. We need to have the right certifications for the quality of the same.

In conclusion, considering biodiesel for construction equipment is a step towards a more sustainable future. While there are some challenges, the benefits of using biodiesel, such as improved air quality, reduced dependence on foreign oil, and lower greenhouse gas emissions, make it a promising alternative to traditional diesel fuel.



#### ABOUT THE AUTHOR:

**Satin Sachdeva** is Founder & Secretary General at Construction Equipment Rental Association (CERA), which represents India's equipment rental industry.

He is the pioneer of seeding the thought of organizing the equipment rental industry and the one who has realised the contribution of the construction equipment rental industry towards India's infrastructure progress. He is also the MD and CEO of Equipment Planet, a premier construction equipment rental company, which also buys and sells construction equipment.



# COMMITTED TO A FUTURE OF SUSTAINABLE GROWTH

Komatsu India is targeting to be carbon-neutral by 2050.

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In a significant breakthrough during FY2022-23, Komatsu India, a fully owned subsidiary of Komatsu, Japan, rolled out bio-diesel compatible off-highway trucks from its state-of-the-art manufacturing facility located at Oragadam near Chennai. This milestone culminated in Komatsu's 100<sup>th</sup> Year celebrations worldwide. It also heralded the start of a new era in the Indian mining equipment industry, which can lead to a substantial reduction in carbon footprint and reaffirm Komatsu's long-term commitment to society with minimum adverse environmental impact.

As the world's leading manufacturer of construction and mining equipment, Komatsu has developed diesel-powered machines that are compatible with B20 fuel including excavators, bulldozers, wheel loaders, motor graders, dump trucks, etc.

With a view to achieving sustainability and reducing environmental impact, Komatsu is researching and exploring alternative fuels to reach the goal. Towards a step in this direction, Komatsu India has been participating in industry events and conferences and working closely with stakeholders, suppliers, customers, and government agencies

to promote the use of alternate fuels in the industry.

Komatsu India works closely with leading oil companies to ensure that biofuels are available, accessible, and affordable for end-users, creating a sustainable grid of energy. Further, Komatsu Oil Wear Analysis (KOWA) supports Komatsu's concerted efforts to check the quality of biofuel and recommend it to users.

Komatsu is targeting to be carbon-neutral by 2050 as part of its long-term environmental goals. The company has set a target to reduce its greenhouse gas emissions (GHGs) by 30% by 2030 and by 80 per cent by



2050, compared to 2010 levels. Komatsu's goal is to significantly reduce its environmental impact and become a leader in sustainable business practices.

The government-empowered GST Council's vital decision to reduce tax rates on ethyl alcohol from 18 to 5 per cent is a major incentive to step up the movement for biofuel. This will also serve as a catalyst with more OEMs deciding to manufacture and supply mining fleet with bio-diesel compatibility to the Indian industry. The government's thrust on accelerating the use of alternate fuel will complement this new initiative of Komatsu.

Komatsu understands the growing need of customers to become carbon neutral as part of their sustainability efforts. It offers multiple solutions to help customers reduce their carbon footprint, such as:

- Komatsu offers electric and hybrid construction equipment such as excavators and bulldozers, which emit fewer greenhouse gas

emissions (GHGs) than traditional equipment

- Equipment that is designed to be energy-efficient and reduce GHG emissions
- Komatsu offers telematics and data analysis services that enable customers optimise fleet use, reducing fuel consumption and GHG emissions
- As part of sustainable mining, Komatsu's mining equipment and solutions enable customers to reduce their carbon footprint and improve the sustainability of their operations
- Komatsu offers carbon offsetting services to customers to offset the emissions generated by their equipment and operations
- Komatsu's smart construction technology aims to improve the sustainability of construction projects using advanced technologies and services. One of the key ways is to increase efficiency and reduce waste through precise machine control

and automation

Additionally, the fleet management systems and data analytics tools used in smart construction help improve a project's overall sustainability by providing real-time information on fuel consumption and emissions, as well as machine performance and maintenance.

Komatsu also focuses on sustainable design principles to reduce the environmental impact throughout the product lifecycle, such as using eco-friendly materials and designing for recyclability.

Several strategies have been implemented by Komatsu to reduce CO<sub>2</sub> emissions in its products. Some instances include:

Developing technology to reduce emissions from internal combustion engines (ICE) and in maintaining performance

Improving energy efficiency in its manufacturing operations using renewable energy sources and energy-efficient technologies

Implementing strict EHS management systems and processes in all its operations to ensure compliance with relevant laws and regulations

Regularly monitoring and assessing the environmental impact of its operations, including air and water emissions, waste management, and resource consumption

Engaging customers with a life support programme to reduce the environmental impact with remanufacturing and rebuilding of components using fewer resources and generating less waste than manufacturing new products

By strengthening these initiatives, Komatsu hopes to contribute substantially to CO<sub>2</sub> reduction in society, thereby achieving DANTOTSU value (a positive cycle of improving earnings and solving ESG issues through creating customer value).



The fleet management systems and data analytics tools used in smart construction help improve a project's overall sustainability.



# WHAT'S AHEAD IN CE MANUFACTURING SECTOR

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Construction equipment OEMs are aimed at intensifying products with the latest technologies adding higher productivity, lower maintenance, easy operations, and remote connectivity.

The construction equipment industry is paralleled to the growth of the nation with its prime contribution laid towards infrastructure development. Major development projects getting the nod which are linked to smart cities, metro lines, roads, railway establishments, new airports at tier II cities, and others are seen as growth drivers for both rural and urban development. The new projects open up significant opportunities for the construction equipment industry to develop thrust on building infrastructure. It is a momentum shift for manufacturers to deliver to growing needs with best-in-class technologically advanced systems. With more diversified applications and operating conditions expected, manufacturers need design flexibility and adaptability of construction equipment as per specific demands.

Construction equipment OEMs are aimed at intensifying products with the latest technologies adding higher productivity, lower maintenance, easy operations, and remote connectivity. However, OEMs are poised with challenges when it comes to the production and monitoring process. The shop floor is built with machines operating on multivendor controllers which indirectly shoulders operator expertise in functioning those machines and maintaining them. Integrating additional systems for data analysis and process monitoring adds to the burden on operational costs. With digital



technologies entering the shop floor, scaling existing controls to new ecosystems mounts to be a humongous task. These challenges in everyday operations have increased pressure on OEMs to explore advanced automation systems that can control the production process, monitor, and diagnose machines and support digital adoption for future needs.

## Unified automation for the complete shopfloor

The advanced factory automation solution from B&R – Edge Controller addresses the growing demands of the construction equipment industry with ease. Edge Controller is a powerful bundle of control and SCADA in a single system. It opens up multiple possibilities for manufacturers to take control of production lines integrating with existing systems and bringing them on a common platform. In

addition, Edge Controller is also known for its integration with the multi-generation, multi-vendor machines on the process line. Edge Controller is programmable for all products, whether the line assembles, excavators, backhoe loaders, bulldozers, or lifting cranes. OEMs can easily expand the process line with additional machines and accessories and link multiple thousand remote IOs with Edge Controller. The powerful controller with easy shop floor integration adds value to the manufacturer in terms of future expansion.

## Data management made seamlessly

Edge Controller is more than just a control system. Construction equipment manufacturers can take advantage of SCADA with Edge Controller. It is built with modular software components that support data





archiving and analysis. The production line has KPIs to achieve to ensure higher productivity, increase machine availability, and adhere to quality gates. Data plays a vital role to enable production teams to achieve these goals. Integrated PDA (Process Data Acquisition) from Edge Controller consists of ready-to-use modules that collect data from the machine in runtime and present it through dashboards and reports. The data from machines are collected using supported fieldbus connectivity and presented in reports customised to the specific needs. Customisation is an integral part of Edge Controller. Based on manufacturer-specific templates, reports are designed and linked with the database. Manufacturers access real-time and historical databases using a single system. It eliminates the costs of additional servers to maintain historical data of the process line.

### Edge Controller is instrumental

in data management. It has extensive support for recipe, user, and alarm management. Manufacturers leverage central user management with the latest username and password policy norms used for maximum data security. Audit reports generated from the Edge Controller keep track of users modifying, adding, or deleting key parameters and notify the process monitoring team. The alarm notifications are shared with respective maintenance and production teams using email and SMS, enabling them to take quick actions to address the alarms. The PC-based performance of the Edge Controller supports production teams to scale the system to handle multiple product outputs. With easier recipe management, operators navigate through touch-friendly screens and make machines adapt to new product line-ups.

### Data security at all levels

Edge Controller brings in the transparency of shop floor data by integrating multi-vendor machines on the production line. It supports open communication protocols such as OPC UA and MQTT that enable the production line to connect and share data mutually with IT systems in a unified and more accessible way, thereby offering complete visibility of end-to-end operations on the shop floor. With the increased volume of data, there is also raised concern about data security by the manufacturers. They are keen on ensuring data generated from the process line is accessed only by authorised personnel. Hence it adds to the responsibility of the automation system to address data security demands. Edge Controller uses best-in-class security features to ensure data is secure throughout the operation. It runs on Linux based operating system which gives utmost priority to data security. In addition, Edge Controller obliges end-to-end encryption and data certificates to give a unique advantage to an authorised user for data access.

### Increased attention to machine health

The shop floor of construction equipment manufacturing mainly consists of machine tool lines, assembly lines, paint shops, and final inspection lines. Each line is synchronised to ensure the free flow of production with maximum uptime and effective utilisation of resources. The maintenance team comes under pressure to ensure seamless production by eliminating unscheduled downtime. Edge Controller with its integrated component for predictive maintenance – ConMon (Condition Monitoring) allows the maintenance team to gather first-hand information regarding any anomalies in the production process.

ConMon is an intelligent condition

monitoring function, which interacts with vibration sensors connected at key points of the machine where possible damage may occur due to abnormal vibrations. The data is recorded in real-time and presented as trends and described through reports for maintenance personnel to take corrective actions and prevent a line from unscheduled stoppage. With the EnMon (Energy Monitoring) component of Edge Controller, manufacturers leverage the benefit of monitoring energy used through various mediums and tracking their consumption levels in real time. Energy data play a vital role in the sustainability goals of organisation and Edge Controller is a prominent enabler in achieving them.

### Tailor-made solution for smart factories

A continuous innovation cycle is significant for comprehensive development in the construction equipment industry. Manufacturers are driven by key facets of the process to ensure optimum performance, improve machine health, upscale digital adoptions, and reduce operational costs. Therefore, adopting a scalable factory automation system is critical in creating a differentiation factor. Edge Controller from B&R offers tailor-made solutions for complete factory automation, including accurate production, maintenance, and energy data monitoring. With powerful software and scalable hardware, Edge Controller proves to be a single system that brings flexibility to the production line and makes them future-ready.



#### ABOUT THE AUTHOR:

Himanshu Sharma is Head – Marketing & Corporate Communication at B&R Industrial Automation. He has been responsible for complex project development solutions.



# THE NEW OUTCOME-FOCUSED WORLD OF MANUFACTURING

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The article outlines how smart, connected services can be used to drive efficiencies and provide insight to inform decision-making that ensures competitiveness while improving performance and profits.



**P**roduct coding and marking is a small but vital component of all manufacturing operations – an incorrect, or missing code can mean that products can't be shipped, which can put retailer performance targets at risk, damage brand reputation, and result in significant punitive fines.

Yet, it would be incorrect to say that manufacturers are overly focused on the specifics of their coding and marking equipment – or indeed, any individual piece of machinery on their production line. Today's manufacturers are more concerned by the bigger picture – in maximising uptime and ensuring that production lines can keep running no matter what.

With demand in manufacturing environments more unpredictable than

ever before, the author outlines how smart, connected services can be used to drive efficiencies and provide insight to inform decision-making that ensures competitiveness while improving performance and profits.

## Changing focus

Prior to the COVID-19 pandemic, manufacturers were already focused on the competitive advantage that could be achieved through integration, automation, and big data – including reduced costs and increased productivity.

Today, the technology and the benefits are the same, but the focus in recent months has been on adaptation; indeed, some might argue, survival. COVID-19 has accelerated a shift in the global manufacturing mindset; as

traditional 'break and fix' approaches, which focus on the performance of individual technologies, are replaced by outcome-focused solutions, which emphasise the value of optimising the overall performance of a production line. It's not hard to see the reason why – at times of unpredictable and unprecedented demand and high volatility machine failure can be disastrous, grinding production to a complete stop until a fix can be implemented. Solutions that optimise the overall performance of a production line can reduce the risks of machine failure, helping to keep lines running no matter what.

This change in mindset requires the provision of more information on the overall health of manufacturing systems. Is the line producing the optimal number of units, for example? Is the equipment indicating trends that are indicative of a higher failure rate? Any sudden change in production performance – or indeed gradual degradation – may indicate that something on the line is not performing as it should.

In response to the changing needs of manufacturers, the industry's forward-thinking hardware and software providers are now using data and insight enabled by Industry 4.0 principles to provide advanced services that limit unplanned production downtime, reduce waste, improve performance, and maximise profits.





## Digitisation, sensorisation and optimisation

There has never been a better time to embrace new digital technologies to improve production line performance. As more and more providers begin realising the value in data acquisition to optimise performance and uptime, manufacturers can begin to take advantage of the technology, without necessitating a full-scale commitment to smart factory solutions.

In the coding and marking industry, for example, manufacturers can now use any number of Industry 4.0-enabled technologies, advanced software applications, and cloud-based solutions, to help improve production line efficiency and product labelling accuracy.

Coding automation software can minimise the risk of error and eliminate production downtime during product changeovers by networking printers, automating job selection, and populating data directly from a range of databases, and MES and ERP systems. Additionally, integrated vision systems can enable live 100 per cent monitoring of print quality – providing information on product throughput and product rejects.

The addition of sensors within Industry 4.0-enabled technology, when combined with cloud-based services, can allow manufacturers to monitor and measure variables that can have an impact on production and coding performance, such as temperature, moisture, air quality, motion, and vibration. This sensorisation can be taken a step further, to allow equipment to auto-detect problems by using algorithms to predict areas where issues may arise, allowing for early, planned intervention to mitigate the risk of unscheduled downtime.

Cloud-based services can also be used to provide remote intervention and assistance – by enabling service support staff to view how machinery is

operating without conducting a site visit. Moreover, augmented reality applications can offer options for remote intervention, allowing external service support to ‘see’ with a customer’s eyes exactly what is occurring on a line. Such solutions can speed up the identification and resolution of issues with machinery: external service engineers can guide production workers to implement machinery fixes or carry out routine maintenance. And, where a site visit is required, they can arrive equipped with the necessary tools, materials, and knowledge to rectify the issue the first time.

Information from analytics can also be used by technology providers to alert manufacturers when their equipment may not be performing as it should be and allow for intervention before a line fails. If the line in question is a critical line, for example, the manufacturer can help production planning and supply chain management by gearing up an alternative line without impacting overall performance.

The increased digitisation and sensorisation of production lines create a treasure trove of data that can be used to optimise operations and further increase production line efficiency. This is where cloud-enabled solutions – including live reporting – present the opportunity for technology providers to move from the traditional, reactive ‘break and fix’ approach to the proactive and adaptive model forward-thinking manufacturers demand.

In the future, it’s likely that artificial intelligence and machine learning capabilities will enable manufacturers to identify further areas of productivity improvement through in-depth analysis of historical and real-time data, scenario planning, and cost model simulation.

## Sustainability drivers

Manufacturers’ most pressing

priority in recent months has been survival. That said, it is clear that the ability to react and adapt – in near real-time – to any slight change in production performance will enable manufacturers to remain operational, productive, and efficient, in the face of any volatile or unpredictable scenario. Going forward, the wealth of data afforded by Industry 4.0 and connected services will enable manufacturers to determine exactly when and why intervention is needed, and how to implement this, in order to keep their production lines running with minimal disruption.

Equally, as the world adjusts to the ‘new normal’, brought about by COVID-19, it is likely that former concerns relating to sustainability will be reinvigorated. As such, having the technology, data, and insight to maximise efficiency, and reduce waste, across any production line, at any time, is now, arguably, more important than ever. Embracing an outcome-focused approach to manufacturing is not something that can be achieved in isolation. Such an approach demands collaboration and the coming together of hardware and software providers to unlock the insight from Industry 4.0-enabled technologies, advanced software applications, and cloud-based services to create and design new outcome-focused solutions. No two manufacturers are the same, and so, in an outcome-focused services world, no two solutions will be the same either. Forward-thinking equipment providers will facilitate this shift, by becoming service suppliers and tailoring their solutions to the outcomes required by specific manufacturers.



## ABOUT THE AUTHOR:

**Vinod Sharma** is Business Head of Haryana-based Domino Printing India. He has over 40 years of cumulative experience with wide scale experience on customer and industry needs.



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# NEED FOR SUSTAINABLE SOLUTIONS

The mobile concept of Terex's crushing and screening products has always contributed towards decreasing the carbon footprint per tonne of material produced.



The global response to climate change has seen changing customer requirements as the Government of India, along with governments across the world, commits to carbon neutrality. This, along with growing investor and public interest in sustainability are factors that contribute to the need for the construction industry to act. Terex India, global manufacturer of materials processing and lifting machinery, is responding to the industry's decarbonisation challenge by providing solutions that work towards minimised environmental impact and greater sustainability. This decarbonisation story begins with the introduction of the concept of mobile crushing and screening, which has evolved to increase fuel efficiency and electrification strategy, and 'wash recycling'.

Some may view this topic as a recent trend, but the mobile concept of our crushing and screening products has always contributed towards

decreasing the carbon footprint per tonne of material produced. This is done by reducing unnecessary material handling of hauling and loading material to static plants in aggregate production or in the ability to recycle and reuse material at the point of use, for example in roadbuilding projects where sub-base material is produced in situ. Using stockpiling conveyors as part of a track mobile set-up is another perfect example of how to cut out unnecessary double handling, reducing fuel consumption and therefore carbon production.

## Sustainability

We offer a range of sustainable solutions for crushing, screening, and sand manufacturing, including the Terex Autosand® machine which produces high-quality Manufactured Sand (M-Sand), an alternative to river sand. Over 100 Autosand® machines have been supplied across India, with one of the largest installations being able to produce 300 tons of M-Sand per hour.

Our Ecotec range of machines works towards sustainability by producing Alternative Fuels from Municipal Solid Waste (MSW) currently accumulating at landfills for cement and waste to energy plants, preserving fossil fuels and improving community living standards.

Our compact range of crushing machines such as jaw crushers and impact crushers under our EvoQuip brand, are being developed to cater to projects in the Construction and Demolition (C&D) waste crushing very close to cities.

## Fuel efficiency

Terex India has evolved its product range to reduce environmental impact by making equipment as fuel efficient as possible, using direct drive systems for its crushing range and improving engine capabilities and drive-line design for its screening range. Direct drive systems are proven to be 13 to 18 per cent more fuel efficient when compared with hydrostatic, resulting in significantly fewer carbon emissions, while improvements to our screening range have reduced engine speeds from 2,200rpm to 1,800rpm, which not only means cleaner engines with fewer emissions but also reduced fuel usage and therefore carbon produced. For example, a typical mid-size screener running at 1,000 hours per year, has a fuel usage reduction of approximately 450 litres, which equates to 1.2 tonne less of carbon produced annually.





The coal sector is also set to grow rapidly for the next few years, so while we already have a range of equipment that customers are currently using in their coal mines, we are also launching new models in hybrid and dual-powered machines, which will further help in the reduction of fuel consumption.

### Telematics

Another important tool for fuel efficiency is telematics, launched in India in 2021. In-depth machine telematics helps customers see how and where their machines are being operated, understand fuel consumption, and carry out fault-finding activities to ensure optimised performance. Customers receive actionable information, with customised reports and suggested actions for more fuel-efficient operation.

### Electrification

Terex India's commitment to sustainability and making a positive impact on the environment continues with electric and hybrid solutions, giving customers alternative energy options to operate their equipment. This has been dramatically enhanced to include more fully electric crushers and screeners as well as models powered by innovative combinations of diesel and electricity. These options enable customers to choose which fuel to use, depending on cost, location, and availability, and are of particular benefit to customers who operate in an area where electricity is more cost-effective than diesel fuel, where diesel engine noise is unwanted or on sites where electricity is the preferred energy source.

Key highlights are the state-of-the-art electric-driven Finlay 690i Hybrid Mobile Screen, and Powerscreen 1010E Maxtrak, both of which received acclaim at the recent bauma CONEXPO.

**Finlay 690i:** By providing customers with the flexibility to run the plant from an external power supply or a standard onboard engine, the Finlay 690i mobile inclined screen has opened doors to low emission screening on multiple applications such as quarrying, mining, sand and gravel and recycling. Additionally, it has been specifically built to meet the needs of users with high output requirements. Terex India was extremely honoured to have Shri Nitin Gadkari, Minister of Road Transport and Highways from the Government of India visit the Terex India booth and launch the electric Finlay 690i Hybrid Mobile Screen. Having a government minister advocate our products and commitment to sustainability was a huge recognition for the Terex India team!

**Powerscreen 1010E Maxtrak:** The Powerscreen 1010E Maxtrak Cone Crusher offers customers the flexibility to power the plant either by mains electricity or an onboard genset power pack. Either power option presents the customer with significant power along with service and maintenance cost savings. This energy efficient and productive machine incorporates the proven 1010E Maxtrak Cone Crusher with direct electric drive, automatic tramp relief, and hydraulic closed side setting (CSS) adjustment.

**Wash recycling:** Another recent development is in the product offerings from Terex Washing Systems, which provides a broad spectrum of specialist equipment, utilised to 'wash' clean and classify often sub-mm material fractions to produce clean sand and scrubbed aggregates. Jaideep explains "Our customers use these end products across a wide spectrum of needs, including concrete production, asphalt, specialist sands for glass and silicon—the list is almost endless. Not surprisingly, as sand and aggregates are the most consumed natural resource after water itself." An example is the

FM120 Direct Feed contributes to economical processing of dust and minerals, which also was on show at Bauma CONEXPO INDIA.

**Terex Washing Systems FM 120DF:** Committing to India's efforts towards recycling, enhancing, and reusing, this compact static washing plant uses centrifugal force within the high chrome-lined hydro cyclone to remove clay, silt and slime from sand to bring it into the preferred requirement. The range combines a collection tank, centrifugal slurry pump(s), hydro cyclone(s) and a dewatering screen to produce up to two grades of clean sand with reduced residual water content in the final product to 10–15 per cent.

In fact, a lot of our equipment is part of the circular economy, which is a big focus area at Terex. The demands of our customers in India are constantly evolving and meeting their needs with a sustainable approach has been a core value of Terex. We host training sessions to educate our dealers and customers on how our products can support sustainable operations. The push for net-zero emissions is evident through our government's initiatives as the Swachh Bharat Mission and Smart Cities program. It's critical that we dramatically reduce our carbon footprint and Terex India has many solutions available today in support of this.



#### ABOUT THE AUTHOR:

**Jaideep Shekhar** is currently serving as the Managing Director of Terex India that includes several business lines like Finlay, Powerscreen, MPS, TWS, Franna, Recycling Systems, and Terex Cranes. He is also responsible for the Terex MPS global Business in Asia, Australia, Europe, Middle East and African markets. He has over two decades of experience in the mining and construction equipment sectors. Jaideep is responsible for approximately \$250 million business across multiple continents and leads a multi-cultural and multinational team spread across 10 countries.



# WHY GOING ELECTRIC IS GOOD FOR CONSTRUCTION & INFRA

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Carbon reductions will become a more important differentiator as more and more companies publicly commit to more ambitious targets.



**Sustainability is not a trend:** It is a driver. All industries play an important role in cutting carbon emissions and in becoming environmentally and socially responsible. Switching to Atlas Copco's zero-emission electric compressors will help contractors and companies achieve their sustainability goals by transitioning away from fossil-fuel dependency, and committing to a cleaner, greener future.

**Silent:** Sustainability is more than just cutting CO<sub>2</sub> output. Cities want to ban pollution – but noise is also a pollutant. Even the latest diesel engines are noisy, whereas Atlas Copco portable electric compressors are quiet. They will remove noise distractions, enhancing both productivity and noise safety.

**Versatile:** The combination of zero

emissions and low noise means Atlas Copco electric portable compressors can work indoors and in extreme conditions of temperature and dust.

**Consumer demand:** Carbon reductions will become a more important differentiator as more and more companies publicly commit to more ambitious targets, and the industry is now waking up to the fact that portable compressors are perfect to go electric. It is likely that ambitions to go green will accelerate rather than slow down – not just out of necessity, but because the customers demand it.

**Innovation:** At Atlas Copco, we have a saying that 'there is always a better way'. An example of this is in our global portfolio with the latest Stage V-compliant diesel portable compressors, which perform far better and are far cleaner than those of even just a decade ago. In India, turning to

an unmatched electric compressor range from 45KW to 110 KW is merely a natural evolution in aiming for 'always better', and staying ahead of the competitive curve by driving innovation.

**Maintenance:** Atlas Copco electric compressors have far fewer parts than their diesel alternative. This means less to go wrong and maintain.

**User friendly:** The lack of a relatively heavy combustion engine or a heavy battery pack offers several convenience advantages. Plug-in electric compressors from Atlas Copco are far lighter and have a 40 per cent smaller footprint than their equivalents, making them easier to tow and manhandle.

**Reliable:** Why a plugin? Well, what site nowadays can operate without electricity? The majority of urban sites have access to the electrical grid and even those that don't use gensets.

**Efficient:** Atlas Copco electric motors work at more than 90 per cent efficiency. For sites that use gensets, they are often working at very low levels of capacity- inefficiently low in fact. Connecting our electric compressors often improves the emission performance of gensets.

**Cost effective:** Over the course of their lives, the total cost of ownership for an electric compressor is cut considerably in comparison to diesel-run variations. Take, for example, Atlas Copco's E-Air 400-185 (90 KW) operates at 50 per cent less cost of ownership as compared to the same capacity of a diesel compressor.







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# DICV'S SUSTAINABILITY GOALS

Driving sustainability in our production and operations has been a key focus for DICV since our inception, says **Satyakam Arya**.

**D**aimler India Commercial Vehicles' (DICV) 'Seven Statements for Sustainability' is a series of goals aimed at reducing its carbon footprint and protecting the local environment. With the aim of making its Chennai plant operations 100 per cent CO<sub>2</sub> neutral by 2025, DICV leads the carbon neutrality commitment in the Indian CV industry. The initial set of goals is a part of DICV's long-term sustainability plan that will be unveiled in multiple phases, setting a new benchmark for the Indian auto



**Satyakam Arya,**  
CEO and MD,  
DICV, said, "Driving sustainability in our production and operations has been

a key focus for DICV since our inception. Our efforts so far have already helped us reach 72 per cent CO<sub>2</sub> neutrality in our plant, and we plan to push this to 100 per cent by 2025. We will work continuously towards a sustainable future for our stakeholders and society as a whole."

At the Conference of Parties (COP26) in Glasgow, India pledged to increase its installed renewable energy capacity to 500 gigawatts and reduce carbon emissions by 1 billion tonne by 2030, as well as achieve 'net-zero emissions' by 2070. As an environmentally-conscious organisation, DICV is also moving forward along a roadmap that helps tackle climate change while spurring economic growth.

In the first phase of the roadmap

unveiling, the company announced its goals for sustainability in operations, laying out initiatives planned for 2025 and beyond. DICV's 'Seven Statements for Sustainability' are as follows:

**Statement 1:** Make DICV operations 100 per cent CO<sub>2</sub> neutral by 2025 by...

- More than doubling the amount of captive solar power generated along with buying wind-based power and bagasse-based green cogeneration
- Changing all internal shuttles to electric vehicles

**Statement 2:** Aiming to make the entire value chain CO<sub>2</sub> neutral by 2047 by...

- Conducting awareness campaigns for dealers/suppliers and supporting them in this transition
- Sharing best practices and benchmarking KPIs for partners

**Statement 3:** Increase the green cover density of Chennai plant by at least 10 per cent by 2025 by...

- Planting mini forests of native trees and increasing bio-diversity
- Planting an additional 2000 trees using organic farming methods

**Statement 4:** Reduce the energy consumption of production shop by at least 8 per cent by 2025 by...

- Upgrading all lighting to LEDs
- Installing more efficient motors and using IoT devices to optimise usage of equipment like chillers and compressors

**Statement 5:** Reduce water consumption by 30 per cent, aiming for 100 per cent water self-reliance at the plant by 2025 by...

- Conserving use of water by smart flow metering arrangements
- Reusing effluent water generated

from operations in paint shop manufacturing process

**Statement 6:** Continuously reduce waste generated from operations by...

- Increasing usage of bio-degradable plastic in packaging process up to 50 per cent by 2025
- Using only biodegradable packaging material for all internal distributions (employee handouts, etc.)

**Statement 7:** Contribute to the betterment of nearby villages and societies

- Improving drinking water facilities and installing solar lighting in the community around Oragadam
- Educating children on environmental sustainability and facilitating health camps in nearby villages

Since the establishment of its manufacturing plant in Chennai, DICV has systematically implemented sustainability initiatives at every level. These include the installation of an energy-generation plant with over 10,000 polycrystalline solar power panels (compensate for around 3300 tonnes of CO<sub>2</sub> emissions/year) and a storage pond that holds more than 60,000 kilolitres. The plant itself is home to more than 17,000 trees and adheres to strict reuse/reduce/replace policies as part of its certification for ISO 14001 (Environmental Management Systems).

These measures contributed to the company winning the 'Best Energy Efficient Organisation' award from the Confederation of Indian Industry in this year's CII National Energy Efficiency Circle Competition.





# ECOMAT DISPLAY: POWERFUL, ROBUST HMIs FOR MOBILE MACHINES

The new robust HMIs have been developed for use in cabins and outside vehicles. Thanks to a high protection rating and optical bonding they are optimally protected against moisture. They withstand strong impacts and permanent vibrations as well as extreme ambient temperatures.

The high-resolution colour displays offer optimum readability even in bright lighting conditions. For operation the devices have freely programmable buttons and/or a capacitive touch screen. For pure display purposes, there is also a device version without operating elements.

The integrated powerful PLC can perform visualisation and operation tasks. It is freely programmable via CODESYS. Numerous interfaces at the back of the device, e.g. CAN, analogue video, USB 2.0 and Ethernet offer maximum connectivity.



- LED displays 10", 12" and 12.3" with buttons or touch screen
- Housing optimised for mobile use
- Optical bonding: offers optimum readability, prevents fogging of the front pane
- Mounting of the devices in any orientation (portrait/ landscape)
- Programmable via CODESYS, numerous interfaces such as CAN, USB 2.0 and Ethernet

## Mechanical design

The displays have a sealed diecast aluminium housing with protection ratings IP 65, IP 67. For connection sealed M12 connections and a 40-pole AMP connector are used. Displays can be used as surface mount device using the tried-and-tested RAM mount system or can be mounted in a wall. Depending on the requirement, the displays can be installed in any orientation.

## Powerful electronics

The integrated 64-bit controller allows a powerful presentation of the high-resolution graphics, processing of the application program and the device functions. Furthermore, there are many opportunities with regard to communication and networking with other systems and networks. With the integrated real-time clock it is possible to give log data a time stamp for better traceability.

All displays have extensive audio functions that, depending on the version, include recording and output.

## Programming to IEC 61131-3

The CODESYS license included in the scope of supply enables clear and easy creation of the application software. The graphic elements are created via the integrated visualisation editor and can, for example, be selected via the buttons or the optional touch function.

*(Communication from the management of the company)*





# CE INDUSTRY ON THE RISE

Off-Highway Research forecasts the market to grow by 9 per cent to 89,350 units in 2023 but predicts it to fall 7 per cent to 83,350 units in 2024 (the general election is scheduled that year).



**C**onstruction equipment demand grew 35 per cent to peak at 98,286 units in 2018 but fell 15 per cent to 83,470 units in 2019. Demand declined a further 12 per cent to 73,595 units in 2020, a much less severe fall than the industry's expectation at the start of the pandemic. The market mitigated the impact of COVID-19 well and, despite a severe second wave of the pandemic, registered a 12 per cent growth with sales of 82,218 units in 2021.

Numerous factors, such as the National Infrastructure Pipeline (NIP), the GatiShakti National Master Plan for multimodal connectivity, National

Monetisation Pipeline (NMP), other government infrastructure programmes, the macroeconomic situation, policies, reforms and challenges, impact the construction equipment market.

The industry could not keep pace with the estimated demand at the beginning of the year owing to the interplay of global and local factors. Off-Highway Research estimates that the construction equipment market has remained almost flat in 2022. Crawler and mini excavators, skid-steer loaders and telehandler sales are expected to have grown in 2022; crawler dozers, mobile cranes and wheeled loaders remained flat; and asphalt pavers,

backhoe loaders, compaction equipment, motor graders and rigid dump trucks are estimated to have declined.

There is a lot of work yet to be done in every infrastructure sector that would require a huge quantity of equipment. Therefore, Off-Highway Research is bullish on sustained demand for all equipment types. The NIP, GatiShakti, NMP and other government infrastructure programmes will drive the demand for construction equipment. However, key challenges for OEMs are the cyclical turmoil and global events that impact demand and create supply chain issues along with higher prices.



## India: Sales and Forecast Sales of Construction Equipment, 2021-2026 (Units)

	2021	2022*	2023*	2026*	% Change 2021-2026*
Articulated Dump Trucks	-	-	-	-	-
Asphalt Pavers	1,005	775	950	1,000	-
Backhoe Loaders	37,120	36,000	38,000	40,000	8
Crawler Dozers	4,343	3,500	4,000	4,500	4
Compaction Equipment	442	450	500	550	24
Crawler Excavators	21,832	23,500	26,000	30,000	37
Crawler Loaders	1	-	-	-	-
Mini Excavators	2,055	2,500	3,000	3,500	70
Mobile Cranes	9,549	9,500	10,500	11,000	15
Motor Graders	856	750	900	1,000	17
Rigid Dump Trucks	682	375	500	550	-19
Skid-Steer Loaders	587	950	650	800	36
Telehandlers	412	525	600	650	58
Wheeled Excavators	8	-	-	-	-
Wheeled Loaders	3,326	3,300	3,750	4,000	20
Total	82,218	82,125	89,350	97,550	19
Annual % Change	12	9	8	-	-

\*Forecast

Source: Off-Highway Research

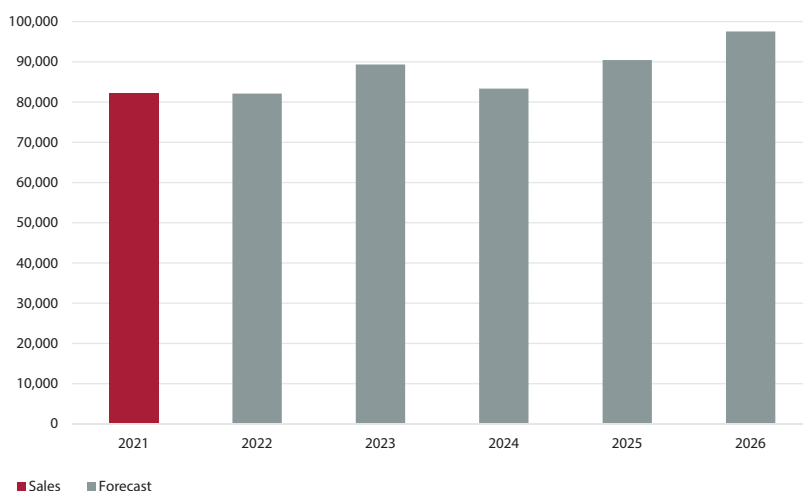
Based on all foreseeable factors at the moment, the Indian construction equipment market is expected to follow an upward trend in the next five years. Off-Highway Research forecasts the market to grow by 9 per cent to 89,350 units in 2023 but predicts it to fall 7 per cent to 83,350 units in 2024 (the general election is scheduled that year). Nevertheless, it will bounce back with

a 9 per cent growth to 90,450 units in 2025 and a further 8 per cent to peak at 97,550 units in 2026.

Almost all types of equipment will witness growth, though the market will continue to be dominated by the five most popular products: backhoe loaders, crawler excavators, mobile cranes, compaction equipment and wheeled loaders. Together, these will

account for 92 per cent of the market in 2026, with backhoe loaders continuing to remain the largest selling type of equipment but crawler excavators will grow at a faster pace. In addition, the market for mini excavators, skid-steer loaders and telehandlers will expand significantly from current levels.

Asphalt pavers, rigid dump trucks, crawler dozers and motor graders will continue to remain within a limited range. The demand for less frequently purchased equipment, such as articulated dump trucks, crawler loaders and wheeled excavators, will be driven by specific orders, and no future pattern can be predicted for them with any degree of certainty.



### ABOUT THE AUTHOR:

**Samir Bansal** heads Indian operations of Off-Highway Research, a management consultancy specialising in the research and analysis of international construction and agricultural equipment markets.



# “SAFETY IS CRUCIAL IN HEAVY-DUTY CRANES.”

**A**vadhesh Sharma, Director, Pandit Cranes Services, shares his views on the Indian equipment market and evolving digital technologies like IoT in the market.

**Give us a brief introduction to the company. What are its offerings?**

Based in Jaipur, Rajasthan, Pandit Crane Service operates a young fleet consisting of modern technologically advanced equipment of around 70+ cranes with capacities ranging from 2 tonne to 500 tonne. We take immense pleasure in the quality of our services, safety standards, craft knowledge, and equipment. With the support of our dedicated employees, we are committed to offering reliable services at reasonable prices. We are a prominent provider of hydraulic cranes, hydraulic telescopic cranes, all-terrain cranes, mobile cranes, trailers, man lifts, and a lot more. The company is valued for its understanding and knowledge of crane operations under local conditions all over India.

At Pandit Crane Service, we are dedicated professionals in the industry who take pride in providing personalised service. Our crane operators are highly skilled, well-experienced, certified, and committed to each client's utmost satisfaction. The company further has an in-house maintenance staff and a full backup system in case of breakdowns. We are committed to providing consistent, cost-effective service while maintaining



uncompromised levels of safety and ensuring we minimise our impact on the environment.

**What is your view on the Indian equipment market and where do you see growth for your products in the coming years?**

India is the world's fastest-growing economy. The growth opportunities for the equipment market in India are huge with supporting government policies promoting foreign direct investment. The demand in the key end-user industries for machinery, namely oil and gas refineries, infrastructure building, chemical, mining, water, etc. is rising. The idea is also to bring more technology and advanced machinery that can be sustainable to the environment. At Pandit Crane Service, we believe that we can play a significant role in transforming the industry with our modern products and high-level service, that we offer to our clients that would create value for society and we serve as a benchmark for the best quality of services provided.

**The mobile cranes market in India is still dominated by pick-n-carry cranes. What are the reasons for this dominance?**

The pick-and-carry cranes in India are used for a wide variety of jobs across different industries. They are used in both commercial and residential projects for moving materials. They are also used as a support to heavy machines with high capacities crawler cranes and all-terrain mantling and dismantling at sites. Because of the diverse use of pick and carry vehicles and a good amount of return in investment, it attracts crane service providers to do business in their region and earn good returns despite providing competitive rates. On the other hand, It also serves as an option for crane hirers and contractors to take services at affordable pricing in the market.

**How IoT and digital technologies are evolving in crawler cranes?**

IoT and digital technologies have evolved from the past in the crawler cranes. It provides the scope to develop understanding from the updated data that is communicated in real-time to the operators and between autonomous systems. One such technology used in crawler cranes is the Safe Load Indicator System in crawler cranes, which helps in monitoring the lift by using various sensors and provides information as per the load chart in real-time. This really has an impact on increased safety at times and results in effective lifting and lower downtime at the site. Modern





technology like these has enabled to capabilities such as location tracking, safety and compliance monitoring, and rapid response diagnostics.

**What is the role of safety in heavy-duty cranes? What are the added safety features of your cranes?**

Safety is crucial in heavy-duty cranes as operating a crane requires skill and technical knowledge. To make a risk-free environment and avoid accidents, we have made it mandatory in every heavy machinery to have a safety load indicator that helps in monitoring the lift by using various sensors and provides information as per the load chart in real-time. It alerts the operator of

crawler cranes, telescopic and mobile cranes, etc. to not exceed the safe operating range of cranes at the site. We at Pandit Crane Service have trained operators that are certified by the authorised company that rates drivers' capability. These licenses and certifications have helped our company to be more reliable while operating the cranes at the site and create a safe environment.

**How do you look at mobile cranes' market recovery and outlook? What will drive the growth in the future?**

The migration of people from rural areas to urban areas globally is contributing to an increase in

demand for mobile cranes as it requires the improvement and development of infrastructure. With the rising population in developing countries like India and China, the construction scope for residential and commercial projects is booming and that results in an increase in the demand for mobile construction cranes. The initiatives taken by the government ministries to support this industry by proving hassle-free commercial loans to the crane owners also signify the growth of mobile cranes in the future and the mindset for potential growth. Also, we believe that in the future, the growth of cranes will be dependent on how sustainably we as crane services providers operate in the environment.

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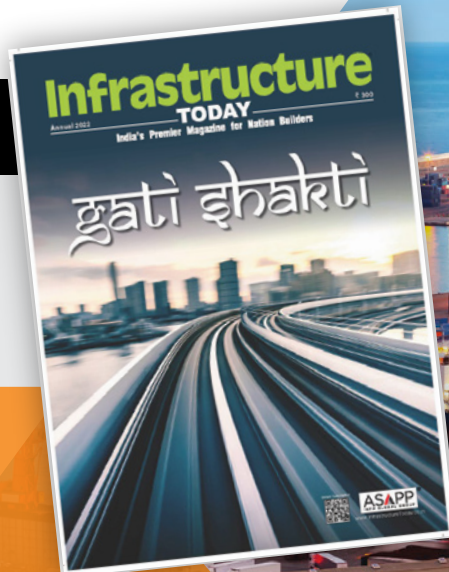
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SCAN TO PAY!



# VOLVO's FIRST FMX ALL ELECTRIC CONCRETE MIXER



**V**olvo Trucks reports it has delivered its first fully electric heavy-duty concrete mixer truck. The Volvo FMX electric four-axle mixer arrived February 9 at a ready-mix concrete plant in Berlin, Germany, owned by global construction materials company Cemex.

Volvo, which recently unveiled its first electric asphalt compactor, says the new electric mixer truck can run for a full workday if it gets a top-up charge during a regular break. The concrete mixer is powered by two electric motors of 330 kilowatts. The motors are powered by four batteries of 360 kilowatt hours. The hydraulic

mixer body gets its power from a traction battery. The cement mixer's superstructure is 11.8 cubic yards.

Volvo notes that it has been a challenge to electrify concrete trucks because of their "heavy loads and continuous mixing demands." But both Volvo and Cemex see the challenge as worthwhile in reducing carbon-dioxide emissions.

"Our partnership with Volvo has incredible potential to contribute to the decarbonization of our business," says Fernando A. González, CEO of Cemex. "Rolling out our first fully electric ready-mix truck is a strong progress in that direction." Volvo notes that emission reduction is not

the electric truck's only benefit.

"Our electric trucks are zero emissions, and their silent operation also provide a better environment for people working at construction sites, as well as for residents living nearby," says Roger Alm, president of Volvo Trucks.

Volvo and Cemex began their partnership on carbon reduction in 2021. They both are founding members of the First Movers coalition. The coalition consists of a collaboration between the World Economic Forum with U.S. Special Presidential Envoy for Climate John Kerry. Its goal is to get companies to commit to making purchases that create market demand for low-carbon technologies. Both companies say they will continue to develop and improve technologies to deliver reduced-carbon concrete transportation. Volvo has set a goal that half of its total sales of new trucks will be electric by 2030, and it plans to achieve "net-zero greenhouse gas emissions in the value chain by 2040." Volvo has also been a leader in developing electric construction equipment, with a goal of eliminating 10 diesel models of compact excavators and replacing them with all-electric models.



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FOR REGULAR UPDATES



# CATERPILLAR UPDATES CAT 950, 962 WHEEL LOADERS

**C**aterpillar has updated its 950 and 962 medium wheel loaders with a host of enhancements to boost operator efficiency, productivity and comfort. Before we dig into the integrated technology, let's take a look at the iron and components.

Both models are powered by the Tier 4 Final Cat C7.1 engine equipped with the automatic Cat regeneration system, electric fuel priming pump, a fuel-water separator and a secondary fuel filter. For faster acceleration and speed on grades, the machines feature a single clutch and lock-to-lock shifting of the five-speed transmission. Traction has also been improved thanks to standard front manual differential locks. Optional automatic front and rear differential locks are also available.

Depending on the region, the 950 and 962 are equipped with either conventional or optimized Z-bar linkage. Cat says the conventional Z-bar design delivers high breakout force at ground level, while the optimized Z-bar linkage offers parallel lift capability for precise work-tool control as well as providing high breakout force at ground level.

Cat's complementary Performance



Series Buckets are available for a range of applications and are designed to balance bucket shape against the loader's linkage, resulting in higher bucket fill and better material retention, according to the manufacturer.

Bucket fill is further enhanced by new Autodig and Auto Set Tires, which Cat says delivers up to 10 per cent more productivity compared to the previous models. Using Autodig, the operator can fully automate bucket loading. Auto Set Tires reduces tire slip and wear by promoting proper loading techniques.

When switching applications, the Cat Fusion Quick Coupler enables the operator to change work tools without leaving the cab. Cat has integrated

more standard technologies on the 950 and 962 wheel loaders to increase jobsite efficiency and productivity.

In addition to the new Autodig and Auto Set Tires, the loaders feature Cat Payload with Assist. The system provides on-the-go weighing of material to help operators hit load targets. By using the loaders' application profiles, operators can set customised profiles for specific applications at the touch of a button.

Product Link wirelessly connects the machine to the office, providing access to production and machine health information. Optional Advanced Payload with Assist includes Tip Off Assist to automate load adjustment of the final bucket to match the target.



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# JOHN DEERE LAUNCHES 2 ARTICULATED DUMP TRUCKS



John Deere has expanded its P-Tier portfolio to include a pair of articulated dump trucks, the 410 and 460 models. Under the new tiering system, Deere has dropped the letter at the end of the model's name that signified the machine's generation. In place of that letter is one of three letters meant to signify its performance and technology tier: a G, P, or X.

Each letter represents a set level of features, with G as the economy model; P includes advanced features, and the X-tier denotes the company's hybrid diesel-electric technology and most advanced features.

For the ADTs, a redesigned, wider dump body than previous models boosts material retention and lowers

loading height and center of gravity, improving cycle times in quarry and aggregate applications.

Overall, the trucks retain the same high-alloy steel dump body, fuel efficiency and drive modes as the previous E-Series models. Deere says all the P-Tier ADTs include additional updates to the external styling and interior cab layout to modernize the fleet while maintaining productivity.

Justin Steger, solutions marketing manager at John Deere Construction & Forestry, said a variety of onboard features helps eliminate some of the operator inputs, enabling simplified operation and increased productivity.

These include the following:

- Rollover protection — alerts operators to unsafe dump angles

and stops the dump cycle.

- Downhill dump protection — automatically calculates ADT position so the dump body doesn't move over-center when emptying downhill.
- Auto dump brake and driveline assist — service brakes latch during unloading.
- Hill hold — automatically applies service brakes when the truck is stopped on an uphill slope and the operator's foot moves from the brake pedal to the throttle, preventing backward machine roll.
- Frame protection — cushions bin travel back to the cradle, preventing aggressive frame seating if dumping is stopped before the bin is fully empty.
- Shuttle shifting — transmission may be shifted without the ADT coming to a stop, improving cycle times.

Steger said dump body limits, standard transmission warm-up cycle and max speed limits help to keep the operator and machine safer and up and running longer. "The P-Tier models were built with the operator in mind to support ease of use and operator comfort."



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# XL's NEW TRAILER SIMPLIFIES EQUIPMENT LOADING

**L**oad and unload construction equipment efficiently with XL Specialised Trailers' new Guardian low-profile, hydraulic detachable gooseneck (HDG) lowboy trailer. Rated at 1,10,000 pounds in 12 feet concentrated, the Guardian HDG is 53 feet long overall with a 26-foot-long by 8-foot 6-inch-wide main deck and a low 22-inch loaded deck height.

The three-axle trailer can be run by itself or with an added flip axle, a spreader bar and flip, a single-axle power booster or a hydraulic flip axle. XL's new bolt-on recessed hydraulic flip axle option houses the hydraulic cylinder. Operators can quickly flip the axle without the need for a forklift. This allows for better loading clearance over the flip axle and easy swapping between flip axles and boosters, XL says. The gooseneck uses hydraulics to detach for loading and unloading. The trailer is available with a 13-horsepower self-contained unit or can be used with a wet kit. The deck height can be adjusted with a five-position variable ride height in the neck and manual ride height in the rear.

The low-profile design provides weight savings and versatility, XL says, allowing scrapers to load over the top. It features a relief cutout, ensuring



ample clearance space for truck fenders, and two removable kingpin settings for compatibility with various truck setups.

On the side of the deck, heavy-duty swing-out outriggers add 12 inches of deck width per side. The outriggers swing to the middle of the deck, creating a strong double-outrigger point in the center of the deck. A heavy-duty front pull-out outrigger eliminates the need to stow and carry loose outriggers. Seven bent D-rings and chain drops are available per side for securing loads.

The bucket well at the rear of the main deck is made from recessed cross members. Combined with the open boom trough design in the wheel area, this design provides a solution for safely transporting excavators.

The trailer's deck is constructed with a fully welded I-beam design, using 100K flanges and 80K webs, as well as upper-flange reinforcement. A toolbox in the front comes standard. A rotating work light on the neck illuminates the area for increased safety and visibility when loading.



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# KUBOTA's FOUR NEW COMPACT TRACTORS



of operation and maneuverability.

Additionally, the LX20 Series comes with a dual engine memory switch, allowing the operator to preset preferred rpm and have the engine match that speed at the push of a button. New mower decks are also available for both models, with integrated wash port attachments for cleaning under the deck.

## Expanded L02 Series

The L2502 and L4802 are available in either hydrostatic transmission or gear drive transmission in two wheel drive or four wheel drive, the company says.

Kubota says both models feature brakes relocated to the left side for easier use, a new loader and new bucket options. LED headlights and side work lights, an improved suspension seat, rubber floor mats and the option to elevate comfort – with updated armrests – further enhance the tractors' brand-new, modern and sleek styling. The L2502 HST models also feature an independent PTO switch.

## New Titan tyres

Both the LX20 and L02 Series include new Trac Loader II tyres, made by Titan International. Kubota has entered into an exclusive agreement with Titan for its compact and utility tractor models.

The tyres feature improved clean-out and are optimised for performing in snow, ice, turf or mud. Titan and Kubota logos are integrated into the sidewall and tread pattern of the tyre.



**K**ubota Tractor Corporation has beefed up its compact tractor lineup with four new models.

The company announced the addition of a new LX20 Series, with the LX3520 and LX4020 as the first two entrants. It also is expanding its popular L02 Series, with the introduction of the L2502 and L4802.

The two models added to the LX20 Series offer a multitude of improvements. Along with new horsepower offerings of 35 and 40, both are available in a factory-installed cab or ROPS configuration. A “special utility,” or SU, model cab option is available for the LX3520.

Meanwhile, the new models in the L02 Series will get a new hood and grille, LED headlights and side work light, improved suspension seat and optional armrests, Kubota says.

## New LX20 Series

Designed with both residential and commercial operators in mind, the Kubota LX20 Series can tackle rural residential tasks, as well as provide the power, performance and comfort to handle commercial jobs, the company says.

In addition to added 35- and 40-horsepower configurations, Kubota says, the new LX3520 and LX4020 models were built with the operator in mind, from an updated cabin to new grips and easier-to-maneuver controls.

The LX20s feature a redesigned transmission aimed at significantly reducing hydrostatic transmission noise for the operator, while an auto throttle helps the tractor to drive with ease, the company says. The LX20 Series features a wider front axle as well as a performance-matched front loader that further improves ease



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