- P World

Design Software:

Empowering India's Infra Boom ...28

bc India 2024:

Redefining India's Infrastructure Vision ...48

FEATURE

Real Estate: The Road Ahead ...36

CASE STUDY

Renovating a World-famous Waterfront ...30







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THE CHIEF EDITOR'S TAKE

Dear Readers,

As we step into 2025, India stands on the brink of an extraordinary transformation in its infrastructure and construction landscapes. The country is poised to enter a new era of economic and urban growth, driven by ambitious government initiatives and innovative technological advancements. In this special edition of EPC World, we explore the dynamic sectors shaping India's future – from groundbreaking infrastructure projects to the rapid evolution of construction technologies.

In this issue, we delve into the expansive scope of India's infrastructural revolution. With an ever-growing population, accelerating urbanization, and an increasing need for connectivity, India is set to redefine its transportation, trade, and regional influence. Visionary projects are being realized across the country, and these efforts will not only stimulate economic growth but also dramatically enhance the quality of life for millions of Indians.

A key trend in the construction industry is the rise of modular construction and prefabricated components. This edition highlights the role of design software like AutoCAD, Revit, and Tekla Structures, which streamline construction for faster, more efficient, and sustainable practices. The integration of technologies such as BIM, AI, AR/VR, and IoT is transforming project design, execution, and management, driving greater efficiency and quality.

In the world of real estate, 2024 marked a year of resilience, with record-high office leasing and surging luxury property values in key markets. The industrial and logistics sectors are thriving, and the data center industry has experienced unprecedented growth. The outlook for 2025 is overwhelmingly positive, as evolving policies and market dynamics continue to fuel expansion in these key areas.

We also take a closer look at the recent 7th edition of bauma CONEXPO India, which set a transformative benchmark for India's construction, mining, and infrastructure industries. Held in Greater Noida, this event underscored the critical role of innovation and collaboration in driving India's infrastructure progress.

As we embark on this New Year, the future of India's infrastructure is not just a vision – it is a rapidly unfolding reality. The insights and trends highlighted in this edition of EPC World provide a snapshot of the exciting developments that will shape the coming years, positioning India as a global leader in infrastructure, connectivity, and sustainable growth.

We hope you find this issue both informative and inspiring as we continue to track the evolution of India's infrastructure landscape in 2025 and beyond.

EPC World Media Group wishes all readers and contributors a prosperous and successful 2025.

Enjoy the read!

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REPORT

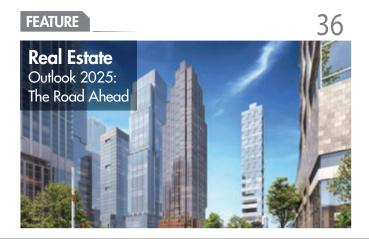
28

48





bc India 2024Redefining India's Infrastructure Vision







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INTERVIEW

42



We may see several new launches in 2025 ANUJ PURI Chairman ANAROCK Group





New-age asset classes are likely to gain traction SHRINIVAS RAO FRICS, CEO Vestian





AM/NS India: Reliable steel solutions partner for CE industry RANJAN DHAR Director & VP – Sales & Marketing AM/NS INDIA

54



Driving innovation, sustainability, and service excellence... MUKUL DIXIT India manager of sales and marketing, (Global Construction and Infrastructure) Caterpillar India





Propel leads the charge in EV truck innovation
SIDDHARTH KIRTANE
President of EV Sales,
Marketing & Services
Propel Industries

60



Cummins is poised to lead the way in Power Generation PANKAJ KAPOOR Vice President - DBU & NRPO Cummins India

ARTICLE

34



Transformative digitalization of hydrology solutions SUDESNA BISWAS Head Hydrology, DGM-Design, Transportation Infrastructure IC L&T

40



Indian real estate landscape: Key trends and market outlook ARVIND NANDAN Managing Director – Research & Consulting Savills India



Synergy Steels celebrates India's affordable housing surge, paving the way for stainless steel demand

ANUBHAV KATHURIA Managing Director
Synergy Steels

SPOTLIGHT

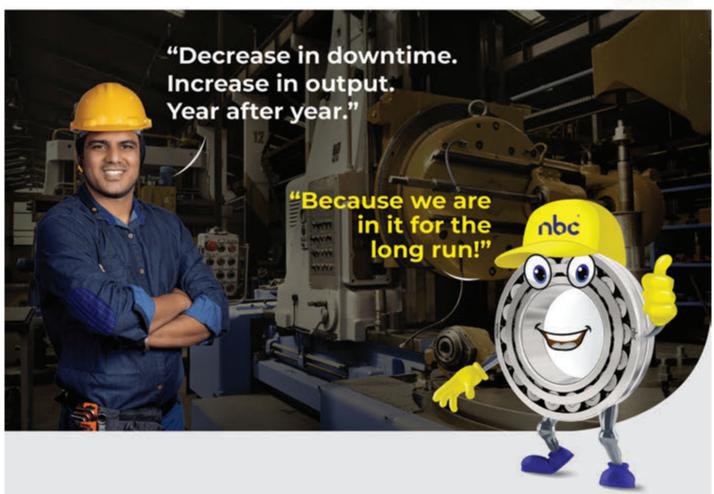
atest technological advancements by Ammann	63
nnovative CEV-V range of CE by Mahindra	64
nnovative earthworks solutions by Kennametal	66
'Services Commitment" program by Caterpillar	67
Propel unveils 470 eTR electric tractor trailer truck	68

Next-generation power solutions by Cummins	70
Schwing Stetter showcased 45+ advanced machines	71
JK Tyre unveils OTR tyres for mining equipment	72
KOEL unveils innovative engineering solutions	74
ACE launches BS-V AX124 backhoe loader	76









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Waaree Energies bags 150 MWp solar module order for a major renewable project in India

Waaree Energies has announced the receipt of order for a major renewable power project of 150MW for the supply of solar modules from a renowned customer engaged in owning, developing, and operating renewable power projects in India. The contract includes the supply of Waaree's flagship high-efficiency Glass N-type Topcon bifacial modules, rated at 585/590Wp. These modules are recognised for their durability, exceptional energy output, and advanced technology, showcasing Waaree's unwavering commitment to quality and innovation. The modules are scheduled to be supplied in the next financial year, 2025-26. The execution of this project will increase India's renewable energy capacity, leading to reductions in greenhouse gas emissions and supporting environmental sustainability.



Mahindra Susten successfully closed ₹1448 Cr. financing for its 560 MWp solar projects

Martial Solren, a 100 percent wholly owned subsidiary of Mahindra Susten, the clean-tech arm of the Mahindra Group, has successfully secured a Rupee term loan of ₹1,448 crores. The financing documents have been formally executed with HDFC Bank and Axis Bank to support its ambitious 560 MWp solar power projects in the states of Gujarat and Rajasthan. This funding will enable the development of the proposed solar plants, marking a significant milestone in the company's efforts to advance renewable energy infrastructure in India. The financing will support solar PV power projects being developed under long-term Power Purchase Agreements (PPAs) with key off-takers. These projects are strategically positioned to play a transformative role in India's transition to renewable energy. Once completed, the plant is expected to generate approximately 9 lakh MWh of solar energy annually. This output will offset around 8.19 lakh tonnes of CO2 equivalent emissions annually, contributing to India's renewable energy targets. The solar power generated will be sufficient to provide clean energy to approximately 1.8 lakh households every year.

Adani Defence & Aerospace to acquire Air Works India

Adani Defence Systems & Technologies (ADSTL) has signed a share purchase agreement to acquire 85.8 percent shareholding in Air Works, India's largest private sector MRO company with the largest pan-India footprint. Air Works offers an end-to-end bouquet of aviation services spanning line maintenance, heavy checks, interior refurbishment, painting, redelivery checks, avionics as well as asset management services to its Indian and global customers. The company undertakes base maintenance for narrow-body and turboprop aircraft, as well as rotary aircraft from its facilities at Hosur, Mumbai and Kochi and with regulatory approvals from civil aviation authorities of more than 20 countries. In addition to being a market leader in civil aviation, Air Works has built significant capabilities in defence MRO, executing projects for key platforms of Indian Navy and Indian Air Force.

Strata secures SEBI license for SM REIT

Strata has received the official license from the Securities and Exchange Board of India (SEBI) for its Small and Medium Real Estate Investment Trust (SM REIT), named Strata SM REIT. This milestone positions Strata as a key player in the burgeoning market for the new asset class of SM REITs in India. Strata SM REIT will enable retail and institutional investors invest in high-quality commercial assets in key geographies, thereby democratizing access to real estate investments. The company aims to initially launch up to six SM REIT schemes in FY26, and gradually increase it to one scheme every month. Strata Capital will be the Investment Manager for the SM REIT, with Axis Trustee appointed as the trustee.

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Defence Ministry signs contract with Cochin Shipyard for Short Refit and SRDD of INS Vikramaditya

The Ministry of Defence has signed a contract with Cochin Shipyard for Short Refit and Dry Docking (SRDD) of INS Vikramaditya at an overall cost of ₹1207.5 crore. INS Vikramaditya is an Indian Aircraft Carrier commissioned in the Indian Navy in November 2013. After completion of the Refit, INS Vikramaditya will join the active fleet of the Indian Navy with upgraded combat capability. This project is an important step towards development of Cochin Shipyard as Maintenance, Repair & Overhaul (MRO) Hub for supporting the industrial ecosystem of India. The project envisages the involvement of nearly 50 MSMEs and would lead to employment generation for more than 3500 personnel. The Project will provide a major boost to Government of India's vision of Atmanirbhar Bharat and Make in India initiative.

NTPC Renewable Energy wins 1000 MW in UPPCL's solar pv power project auction

NTPC Renewable Energy (NTPC REL), a wholly owned subsidiary of NTPC Green Energy (NGEL), has emerged as a successful bidder in the ereverse auction conducted by Uttar Pradesh Power Corporation Limited (UPPCL). The tender, aimed at the "Selection of Solar Power Developers for Setting up 2000 MW ISTS-connected Solar PV Power Projects in India under Tariff-Based Competitive Bidding". NTPC REL secured a capacity of 1000 MW at an impressive tariff of $\ref{2.56/kWh}$. The Letter of Award (LOA) from UPPCL is awaited.

ABB launches ChloroStar[™] family of analyzers for smart and efficient chlorine measurement

ABB has launched ChloroStar™, a family of sensors, transmitters and accessories for accurate and reliable chlorine measurement and analysis that enable users in the water, wastewater and other industries to control chlorine more efficiently, enhancing treatment and increasing process uptime. To date, chlorine measurement and analysis has been challenging, with many sensor technologies requiring time-consuming maintenance to resolve issues such as fouling and drift that have affected sensor performance. The ChloroStar™ family of chlorine analyzers addresses this challenge. With selfcleaning and resilient sensors, modular installation, predictive maintenance, and diagnostics, the ChloroStar™ family makes it quicker and easier than ever to achieve accurate measurements and maximum uptime of the chlorine dosing process, while ensuring that sensor maintenance costs are kept to a minimum. The ChloroStar™ Digital Sensor is an intelligent tri-electrode sensor for the measurement of Free or Total chlorine. Featuring in-built diagnostics, pH compensation and EZLink™ connection technology, the unit provides reduced drift and increased accuracy, while the membrane-covered design minimizes cleaning and removes the need for additional sample buffering.

Tecnimont (Maire) expands its footprint in India with a new office in Navi Mumbai

MAIRE has announced the opening of its new Tecnimont (TCMPL) office in Airoli, Navi Mumbai - the sixth one in the heart of the Mumbai Metropolitan Region and the seventh in India. The new office is the third opening at Airoli's Mindspace area in the Gigaplex Tower, with a seating capacity of 700 people. Strategically located in the Central Region, the Airoli office prioritizes the reduction of employees daily commuting time by 3 hours average improving their work-life balance and contributing to the carbon emissions abatement which aligns with MAIRE's focus on sustainability and environmental responsibility.







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- Advanced Control: New-generation EPM for intuitive operation with all-round visibility, adjustable console, and hydraulic roof.
- Flawless Finish: Automatic conveyor and auger control with ABG's patented automatic track tensioner for consistent paving results.



Ambuja cements partners with Coolbrook to leverage zero-carbon heating technology

Ambuja Cements has further advances towards its Net Zero goals by leveraging zero-carbon heating technology to decarbonise its cement manufacturing process. The Company has entered into a strategic partnership with Finland-based technology and engineering company 'Coolbrook'. Ambuja will implement Coolbrook's proprietary RotoDynamic Heater™ (RDH™) technology to significantly reduce its fossil fuel dependence and carbon emissions. The RDH technology utilises mechanical energy to generate high temperature using green power at highly competitive rates. The process can replace / minimise fossil fuels used for reaching high temperatures in cement kiln pre-calciner, crucial for cement manufacturing and multiple other applications. Being a carbon-free process, it can significantly reduce emissions from the use of conventional fuels in a cement plant.





Federal Bank boosts its commercial rooftop solar financing for MSMEs in association with Ecofy

Federal Bank has announced a partnership with Ecofy, India's first green-only NBFC, backed by Eversource Capital, to offer innovative financing solutions for MSMEs investing in commercial rooftop solar installations. This collaboration marks one of the first comprehensive co-lending partnerships specifically designed to address the unique solar financing needs of the MSME sector. The program targets financing 3,600 kW of rooftop solar installations annually, benefiting numerous MSMEs while cutting over 2,500 tons of $\rm CO_2$ emissions each year - accelerating decarbonisation and fostering sustainable growth. Most manufacturing MSMEs predominantly use electricity during daylight hours, making rooftop solar an ideal solution. However, financial constraints have traditionally hindered their transition to renewable energy, with many institutions either reluctant to lend or offering loans at prohibitively high interest rates. The co-lending arrangement of Federal Bank with Ecofy for funding Rooftop solar installations is augmenting Bank's commitment to support the green initiatives by businesses/industries in line with the vision of the decarbonisation that is resonating across the country and the globe.

Blue Energy Motors achieves saving of 10,000 tonnes of CO₂ emissions

Blue Energy Motors has reached a remarkable milestone by saving 10,000 tonnes of CO₂ emissions since the deployment of its Liquefied Natural Gas (LNG)-powered green trucks. This achievement is equivalent to the annual carbon absorption of over 4,00,000 mature trees, underscoring the company's pivotal role in decarbonising India's commercial transportation sector. This milestone aligns seamlessly with India's commitment to achieving Net Zero carbon emissions by 2070. The transport sector, particularly commercial vehicles, accounts for a disproportionate share of carbon emissions. According to the Ministry of Road Transport and Highways, commercial vehicles contribute nearly 40% of CO2 emissions in road transport while comprising only 4% of the total vehicle fleet. These figures highlight the urgent need for sustainable alternatives like LNG and EV, which have emerged as game-changers in reducing greenhouse gas emissions. LNG-powered trucks offer a cleaner and more sustainable alternative to diesel vehicles, cutting CO2 emissions by up to 30% while significantly reducing particulate matter and nitrogen oxides. When deployed in suitable long-haul applications, these benefits amplify, making LNG technology a cornerstone of India's green logistics transition.



Ambuja Cements commissions 200 MW Solar Power in Khavda, Gujarat

Ambuja Cements has successfully commissioned and started power transmission from its 200 MW solar power project in Khavda . The balance 806 MW capacity from this project is at various stages of commissioning and expected to start transmitting in phases between March 2025 and June 2025. Positively impacting the Company's EBITDA, this development leads to an impressive 70 percent savings compared to current power cost. The Company has received standing clearance for its 200 MW Solar Power Project from the Western Regional Load Dispatch Centre (WRLDC). This first phase of its ambitious Green Energy Project, paves the way for further value unlocking for the Company's ₹10,000 crore investment towards green power - 1 GW of Renewable Energy, including Solar and Wind, along with 376 MW of Waste Heat Recovery Systems (WHRS). Of the remaining 806 MW capacity from this project, 156 MW of Wind Power from Khavda and a further 300 MW Solar Power from Rajasthan are expected to be commissioned by March 2025 in phases. The balance 350 MW Solar power is expected to be commissioned by June 2025.

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Concrete Kerbing Machine (MKM-351)



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GreenLine expands green logistics footprint with Exide Industries partnership

GreenLine Mobility Solutions has partnered with Exide Industries. This collaboration will integrate GreenLine's eco-friendly LNG-powered trucks into Exide's logistics operations, marking a significant step toward aligning Exide's supply chain with its sustainability goals. By adopting GreenLine's LNG-powered fleet, Exide takes a bold step in reducing its environmental footprint while ensuring efficiency and reliability in its long-haul transportation. As a prominent player in India's battery manufacturing sector, Exide joins a growing number of industries leveraging GreenLine's innovative, environmentally-friendly transportation solutions. GreenLine's LNG-powered fleet is equipped with advanced technology, real-time vehicle monitoring, predictive analytics, and enhanced safety features. These trucks offer a cost-effective, reliable, and environmentally friendly alternative to traditional diesel-powered vehicles, with a range of up to 1,200 km on a single tank-making them ideal for Exide's long-haul transportation needs. With this partnership, Exide sets a new benchmark in the battery manufacturing sector by integrating sustainability into its core operations without compromising on performance or efficiency.

Sterlite Power raises INR 725 crores from GEF Capital and ENAM Holdings

Sterlite Power has successfully raised INR 725 crore in a primary fundraise round from GEF Capital Partners and ENAM Holdings. As part of Sterlite Power's demerger exercise, the Global Products and Solutions (GPS) business was hived out and is now an independent company since October 2024. This is the first fundraise for the products and solutions business since its inception. The funds will be used for the ongoing capex expansion and drive strategic growth initiatives by enhancing production capabilities, accelerating new product development, and expanding presence across key international markets. The GPS business has sustained its growth trajectory, securing orders worth INR 2,715 crores in H1 FY25. As of November end, the open order book of the GPS business stood at ₹6700 crores. Sterlite Power Transmission (SPTL) has formally demerged into two companies. The demerged company, viz, SPTL will now house the power capital goods business, comprising of cables, conductors, and specialized services. The resulting entity Sterlite Grid 5 (SGL5) will house the transmission concessions business.

Nuvoco Vistas to acquire Vadraj Cement

Nuvoco Vistas Corp has emerged as the Successful Resolution Applicant (SRA) of Vadraj Cement (VCL), currently undergoing Corporate Insolvency Resolution Process. The Resolution Plan submitted by Nuvoco has been approved by the Committee of Creditors (CoC), and a Letter of Intent (LoI) has been issued. The transaction will be implemented by Vanya Corporation, a wholly owned subsidiary of Nuvoco Vistas Corp. Nuvoco intends to fund the transaction without a significant rise in its consolidated debt levels. A phased investment will be spread over 15 months towards the refurbishment of assets and to drive operational improvements across the VCL plants. The estimated target date to commence production is around Q3 FY27, subject to the Hon'ble National Company Law Tribunal (NCLT) approvals for the Resolution Plan. The existing facilities include a 3.5 MMT-PA (~10,000 TPD) clinker unit in Kutch, Gujarat, and a 6 MMTPA grinding unit in Surat, Gujarat. Additionally, VCL owns high-quality limestone reserves, ensuring a consistent and sustainable supply of raw materials for future production. The captive jetty in Kutch further enhances logistical efficiency. With this transaction, Nuvoco's total cement production capacity is set to increase to approximately 31 MMTPA, distributed as 19 MMTPA in the East, 6 MMTPA in the North, and 6 MMTPA in the West, consolidating its position as the fifth-largest cement group in India for long-term.



NHAI to issue green bonds worth ₹1,000 crores

The National Highways Authority of India's (NHAI) fully owned Special Purpose Vehicle (SPV) 'DME Development' (DMEDL) will issue green bonds to raise funds for the implementation of environment friendly measures on Delhi-Mumbai Expressway project. To be held under closed bidding system, the aggregate total size of the issue will be upto ₹1,000 crores with a base issue size of ₹500 crores. There will be a green-shoe option to retain oversubscription up to ₹500 Crores. The proceeds from the issue of 'Green Bonds'

will be used for activities such as expenditure on avenue plantation, median plantation, construction of animal underpasses, natural stormwater drainage, streetlight on renewable energy (solar), waste recycling & reuse and rainwater harvesting. The issue will help in enhancing DMEDL financial performance in terms of the overall cost of borrowings and will diversify investor base by attracting 'Environmental, Social, and Governance' focused investors. DMEDL has appointed Care Edge analytics as the Third-Party Reviewer (TPR) who have identified and certified the Green Activities of DMEDL.





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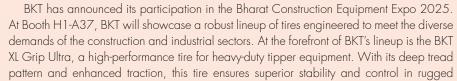
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BKT Tires to showcase advanced Off-Highway Tire solutions at Bharat Mobility Global Expo 2025





conditions, making it the ideal choice for tipper equipment operators working in extreme environments.

The BKT AT 621 range, engineered for Backhoe Loaders in soft soil applications, features an extra-deep tread for exceptional resistance to cuts and chips, self-cleaning properties, and enhanced durability. Designed for 4WD configurations, it ensures dependable traction and performance, even in the most demanding terrains. The BKT Loader Plus, a bias-ply tire, is purpose-built for backhoe loaders operating in rocky environments. Its specialized tread compound offers superior resistance to cuts and chips, making it ideal for tasks such as loading and dozing in harsh conditions. The BKT BK 6060 - Backhoe loader tire is designed for both on-site and road use, handling diverse terrains with reliability and durability. Suitable for 2WD front configurations, this tire is tailored to Indian market needs, ensuring adaptability and peak performance in challenging operations. The showcase reinforces BKT's commitment to its 'Bharat Ka Tire' campaign, which emphasizes products that are 'Built in Bharat; Built for Bharat; Building Bharat.' This philosophy underpins BKT's contributions to India's construction sector, where innovation, reliability, and sustainability are central to its mission.

Zepto and NX logistics India unveil premium warehousing facility at Sumadhura Logistics Park

Sumadhura Group has inaugurated a premium warehousing facility for Zepto, India's prominent quick commerce company and NX Logistics India, a global logistics giant at Sumadhura Logistics Park - Bengaluru's largest Grade-A+ warehousing hub. This milestone marks the establishment of one of Zepto's most advanced logistics spaces, aiming to optimise its supply chain and cater to its growing operations in the region. This facility is part of a strategic partnership with NX Logistics India (Nippon Express), which involves a lease agreement for 1.8 lakh sq ft. The state-of-the-art facility, subleased to Zepto, is equipped with cutting-edge infrastructure to support efficient storage and seamless logistics operations, driving Zepto's growth across multiple categories. Sumadhura Logistics Park, spanning 100 acres, is set to redefine Bengaluru's warehousing landscape. The first phase involves a planned investment of ₹600 crores to deliver 2.5 million square feet of prime warehousing space, with a vision to expand to 6 million square feet in subsequent phases. This project underscores Sumadhura Group's commitment to providing world-class logistics infrastructure in the region. Sumadhura Logistics Park has delivered 5,00,000 sq. ft space till today and plans to complete 8,00,000 sq.ft by March 2025.

SAIL strengthens Mahakumbh Mela 2025 with 45,000 tonnes of steel

Steel Authority of India (SAIL) has supplied approximately 45,000 tonnes of steel for the upcoming Mahakumbh Mela 2025 which will be held in Prayagraj. The total quantity of steel supplied includes chequered plates, hot strip mill plates, mild steel plates, angles and joists. The steel supplied by SAIL will play a crucial role in supporting the construction of various temporary structures essential for the smooth and successful conduct of the Mahakumbh Mela 2025. These include pontoon bridges, passage, temporary steel bridges, substations and flyovers. Major customers for this steel supply include the Public Works Department (PWD), Uttar Pradesh State Bridges Corporation, Electricity Board and their suppliers.

Tata Consulting Engineers acquires US Design & Engineering Firm CDI Engineering Solutions

Tata Consulting Engineers (TCE) has acquired CDI Engineering Solutions (CDI), formerly Comprehensive Designers. CDI is a renowned US-based design engineering firm with a 75-year legacy. This strategic acquisition is a significant milestone in TCE's journey to build a global business of scale, delivering value by developing efficient, innovative, and sustainable projects for its customers worldwide. Recognised as one of the Top 20 firms in the Industrial/Oil & Gas market by Engineering News-Record (ENR), CDI has established a reputation for excellence in both traditional and emerging energy markets, including battery materials, carbon capture, and low/zero-carbon fuels. Its long-standing client relationships and proven track record in delivering safe, efficient, and high-quality projects have made CDI a trusted partner to leading global companies. With its expertise and a client base that includes several Fortune 500 companies, CDI's capabilities complement TCE's strengths in engineering design and

project management. The acquisition of CDI marks a deliberate step towards expanding TCE's global footprint and scaling its expertise. Together, the two organisations are well-positioned to deliver integrated, client-focused solutions addressing critical global challenges, such as clean energy transition, decarbonisation, and resilient infrastructure.







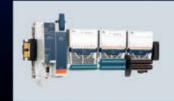


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Aequs receives a contract to supply complex Airbus A220 door components from Dynamatic Technologies

Dynamatic Technologies and Aequs have signed a contract for the supply of complex structural parts for the Airbus A220 Door Program. As part of the contract, awarded by Dynamatic Technologies for the manufacture and supply of components, Aequs will leverage its end-to-end capabilities to manufacture and deliver



over 200 detailed parts requiring complex tool design, forgings, machining, and surface treatment. This contract for the supply of these critical parts over a period of five years strengthens the strategic partnership between the two companies, which are prominent players in the global aerospace supply chain. Giving a significant push to the Government of India's 'Make in India' vision, Airbus had contracted Dynamatic Technologies in February this year for one of the largest Aerospace export orders to Indian companies for the manufacturing and assembly of its A220 Family aircraft doors. The contract included the manufacturing of detailed parts components creating downstream opportunities for other Indian suppliers.

Tourism Ministry approves 40 projects for development of lesser-known tourism sites

The Ministry of Tourism in a big boost for tourism sector has approved 40 projects worth ₹3295.76 crore for development of lesser-known Tourism sites in 23 states, across the country. The initiative aims to ease pressure on high-traffic sites and promote a more balanced distribution of tourists across the country. By focusing on lesserknown destinations, the Ministry hopes to enhance the overall tourism experience, boost local economies, and ensure sustainable growth in the tourism sector through a strategic approach to new project selection. Government investment in the project will act as a catalyst, stimulating economic growth and creating jobs. By leveraging private sector expertise and capital at destinations, the States can enhance public infrastructure, improve local amenities, and attract more tourists, ultimately boosting the regional economy and fostering long-term development. The Ministry is also emphasising for community-based tourism that empowers local populations and preserves cultural heritage. By integrating sustainable practices into tourism planning, State Governments will be able to ensure long-term growth while safeguarding natural and cultural resources by adopting best practices. The Ministry of Tourism is also encouraging State Governments to integrate advanced technologies into their tourism projects. By adopting technology, States can streamline operations, optimize tourist flow, and provide sustainable, innovative solutions for growth in the sector.

UltraTech Cement inaugurated 150 UBS Stores across 135 cities in a single day

UltraTech Cement has inaugurated 150 UltraTech Building Solutions (UBS) stores across 135 cities on a single day. This initiative will enrich the lives of 30 lakh+ Individual Home Builders across 10 lakh Residential sites. Ultra Tech also launched Weather Pro Top Shield and Bitupro alongside store launches. The stores, spread across states like Delhi, Western UP, Haryana, Punjab, Jammu and Kashmir, Himachal Pradesh, Rajasthan, and Madhya Pradesh, are designed to serve UltraTech Cement's growing markets in North India. This multi-state inauguration model underscores the company's commitment to enhancing customer lives and fostering a solutions-based approach. These UBS stores' inauguration is a landmark event for UltraTech Cement and its consumers- a change that positively impacts many residential construction sites in the target states. The UBS stores are strategically focused to give one-stop solutions and support the Individual Home Builder's full journey and provide them with high-quality building material, professional advice and easy building process all under one roof.

BHEL successfully commissions Unit-1 and 2 of 6X170 MW Punatsangchhu-II Hydroelectric Project PHEP-II in Bhutan

Bharat Heavy Electricals (BHEL) has successful commissioned two units of the 6x170 MW Punatsangchhu-II Hydroelectric Project (PHEP-II), in Bhutan. Executed as part of a bilateral agreement between the Government of India and the Royal Government of Bhutan, PHEP-II is a greenfield hydro project located in the Wangdue district of Western Bhutan. Significantly, the Francis Turbine installed in the project is designed to operate at a rated head of 241 meters – the highest for any Francis Type Hydro Turbine in Bhutan. On commissioning of all six units, the expected annual power generation will be 4,357 gigawatt-hours. BHEL's scope in PHEP-II comprises design, manufacture, supply, installation and commissioning of Electro-Mechanical works for 6x170 MW Vertical Francis Turbines & matching Synchronous Generators, Control & Monitoring (SCADA) System, Generator Transformers, Shunt reactor, Busduct, Pothead yard along with associated auxiliaries.



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2025

The Year India's Infrastructure Takes a Quantum Leap

As India approaches 2025, the country stands at the cusp of an infrastructural revolution, one that promises to reshape its economic and transportation ecosystems for decades to come. With a rapidly expanding population, growing urbanization, and an increasing need for seamless connectivity, India's infrastructure development is entering a transformative phase. The government, through visionary projects, is poised to modernize transportation, improve trade links, and expand its regional influence. These massive projects will not only fuel economic growth but also improve the quality of life for millions, ultimately positioning India as a global leader in infrastructure and connectivity. EPC World explores the future landscape



Investments and focus on development of urban infrastructure has been a pivotal focus of the central government, highlighted by the various significant policy initiatives and projects in the last few years. Union Minister for Housing and Urban Affairs and Power, Shri Manohar Lal, highlighted a dramatic rise in urban sector investments during a recent press briefing in New Delhi. He revealed that investments have grown 16 times, from around ₹1,78,053 crore between 2004-14 to ₹28.52.527 crore since 2014. This growth underscores the government's dedication to achieving the vision of a "Vikshit Bharat" by 2047.

The minister also emphasized that

urban development has become a key focus of India's growth agenda, driven by the rapid pace of urbanization. Over the past six months, urban development programs have been expanded and implemented with greater efficiency, reflecting the government's commitment to fostering sustainable and inclusive urban growth.

He mentioned that approximately 993 kilometers of metro rail are currently operational across 23 cities in the country, while around 997 kilometers are under construction in 28 cities. He further highlighted that India is on track to become home to the second-largest metro network in the world.



www.epcworld.in 23

Urban Mobility and Sustainability Initiatives

The government is prioritizing the enhancement of urban mobility and sustainability through various measures, including:

• Expansion of Regional Rapid Transit Systems (RRTS)
The first RRTS corridor between Delhi and Meerut was sanctioned in 2019. As of October 2023, 42 kilometers of this stretch have been made operational, with the remaining portion scheduled for completion by June 2025.

Promotion of E-Mobility and Walkable Streets

Efforts are being made to encourage e-mobility and pedestrianfriendly urban designs to mitigate pollution and address environmental challenges.

• Metro Rail Network Development

In May 2014, only 248 kilometers of metro rail lines were operational across the country. This has grown by 745 kilometers to a total of approximately 993 kilometers currently operational. Additionally, around 998 kilometers of metro rail projects, including the remaining section of the Delhi-Meerut RRTS, are under construction in cities such as Delhi, Bengaluru, Kolkata, Chennai, Kochi, Mumbai, Nagpur, Ahmedabad, Gandhinagar, Pune, Kanpur, Agra, Bhopal, Indore, Patna, Surat, and Meerut.

Ridership Growth

The average daily metro ridership has surged from 28 lakh in 2013-14 to over 1 crore, reflecting the rapid expansion and growing usage of the metro rail network.

• "PM-e-Bus Sewa"

Launched on August 16, 2023, this initiative aims to strengthen urban bus services by deploying 10,000 fully air-conditioned electric buses under the Gross Cost Contract (GCC) model. The program comes with a central assistance of ₹20,000 crore to promote sustainable urban transport solutions.

Key Developments to Watch

Mega Ports and Trade Corridors

Among the most significant undertakings are the mega port projects at Galathea Bay and Great Nicobar in the Andaman and Nicobar Islands, and Vadhavan in Maharashtra. These ports are set to become key nodes in India's maritime network, driving international trade and logistics. Complementing these maritime projects, the India-Middle East-Europe Economic Corridor will foster

seamless trade between India, Europe, and West Asia, creating a dynamic pathway for exports and imports. This corridor will not only enhance economic exchanges but will also establish India as a vital global trade hub.

Revolutionizing Rail Travel with Vande Bharat and High-Speed Rail

One of the most exciting developments in India's transportation sector is the introduction of long-distance Vande Bharat trains. These trains promise to revolutionize domestic travel, providing faster, more efficient, and comfortable options for commuters. Moreover, the Mumbai-Ahmedabad high-speed rail corridor is set to break new ground as India's first high-speed rail project, significantly reducing travel time between these two major cities. This project is expected to set the stage for a nationwide high-speed rail network. Additionally, the Kashmir Rail Line, expected to improve connectivity in the region, will further enhance the nation's rail infrastructure.

Delhi-Mumbai Expressway: A Game-Changer for Connectivity

The highly anticipated ₹1 trillion Delhi-Mumbai Expressway is set to drastically reduce travel time between Delhi and Mumbai, two of India's largest economic hubs. This expressway will not only benefit daily commuters but will also have significant implications for logistics, trade, and tourism. By improving transportation efficiency, it will contribute to overall economic growth and integration between two of India's most vital regions.

Safety and Capacity Enhancements on Roads and Rail Tracks

As the infrastructure sector rapidly evolves, the government has made it a priority to address safety concerns, particularly on roads and rail tracks. With ongoing efforts to reduce safety lapses, along with the expansion of track and train capacity, the country is working to ensure that it can accommodate an increasing number of passengers. These upgrades will help reduce congestion and make travel safer and more efficient, benefiting millions of people who rely on India's roads and rail networks daily.

With a focus on boosting global trade, enhancing mobility, ensuring safety, and fostering

economic development, India's infrastructure ambitions are rapidly moving from vision to reality. The nation is on the cusp of a transformative era in 2025, with the culmination of several ambitious infrastructure projects that promise to redefine connectivity, optimize travel times, and catalyze economic growth. These projects reflect the nation's commitment to modernizing its urban and regional infrastructure, ushering in a new chapter of progress and development.

Six Key Projects Transforming India's Infrastructure Landscape

Hyderabad City Innovative and Transformative Infrastructure (H-CITI) Programme

Hyderabad is set to experience a comprehensive urban overhaul through the H-CITI initiative, a forward-thinking programme championed by Telangana's Chief Minister, A Revanth Reddy.

• Investment and Scope

A massive ₹7,032 crore has been allocated for 38 transformative projects aimed at resolving traffic congestion and improving urban mobility. These include constructing grade separators, flyovers, Road under Bridges (RuBs), Road over Bridges (RoBs), tunnel corridors, and pedestrian-friendly infrastructure.

• Foundation of Planning

The programme stems from a Comprehensive Traffic Study by the Hyderabad Metropolitan Development Authority (HMDA), identifying critical bottlenecks and proposing solutions tailored to urban needs.

• Expected Benefits:

- o Boosting average travel speeds from 15 kmph to 35 kmph.
- o Cutting fuel consumption significantly.
- o Reducing air pollution levels.
- o Establishing a conflict-free road network that minimizes delays and enhances safety.

• Complementary Projects:

- o 40 additional projects under the Strategic Nala Development Programme-II (SNDP-II) to improve water flow and flood management.
- o 41 projects financed by the National Disaster Mitigation Fund (NDMF), collectively costing

Key accomplishments under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

Category	JnNURM	AMRUT
Worth of Projects Sanctioned	₹66,837 crore	₹2.73 lakh crore
Committed Central Assistance	₹35,814 crore	₹1.03 lakh crore
Worth of Projects Completed	₹45,000 crore	₹96,970 crore
Funds Released	₹27,764 crore	₹46,625 crore
Taps Installed	1.89 crore	Not mentioned
Sewer Connections	1.49 crore	Not mentioned
Water Treatment Capacity	4,649 MLD (WTP)	Not mentioned
Sewage Treatment Capacity	4,429 MLD (STP)	Not mentioned
Water Network	64,463 km	Not mentioned
Sewer Network	19,598 km	Not mentioned
Reuse Capacity	1,437 MLD	Not mentioned

₹959.08 crore.

The H-CITI initiative is poised to transform Hyderabad into a city of seamless mobility, modern infrastructure, and sustainable urban living.

2. Mumbai Coastal Road Project

Mumbai's Coastal Road Project is a gamechanger for the city's transport network and urban aesthetics, promising smoother commutes and a rejuvenated coastline.

• Major Milestones:

- o The south-bound connector between the Coastal Road and the Bandra-Worli Sea Link is set for installation on January 26, 2025.
- o The final two arms of the Haji Ali interchange are expected to become operational in early 2025.

• Transformative Additions:

- o Land Reclamation: Approximately 70 hectares of land have been reclaimed, paving the way for new open spaces.
- o Promenade and Themed Precincts: Plans include a sprawling promenade and innovative spaces such as "Green Shore," "Nature's Cove," and "Park Line," offering recreational and cultural opportunities.

• Impact on Traffic:

With Mumbai's notorious traffic congestion, the project promises faster, uninterrupted travel from Marine Drive to Bandra, providing a significant relief for daily commuters.

www.epcworld.in 25

Beyond improving commute times, the Coastal Road project marks a strategic effort to enhance the city's coastal identity, making it more livable and visually appealing.

3. Jewar International Airport

Jewar International Airport, located in Uttar Pradesh's Gautam Buddha Nagar district, is a landmark aviation project poised to elevate India's global connectivity.

• Specifications:

- o Built over 1,334 hectares, it includes a 101,590 sq m terminal and a 3.9 km runway, making it Asia's largest and the fourth-largest airport in the world.
- o The first phase will accommodate 12 million passengers annually, initially hosting 30 flights across 25 domestic and three international routes (Singapore, Dubai, and Zurich).

• Sustainability Goals:

Designed to align with India's net-zero emissions objectives, the

airport integrates eco-friendly technologies, ensuring a sustainable operational model.

• Timeline and Preparations:

Scheduled to begin operations on April 17, 2025, the airport has undergone rigorous trial runs and system calibrations to ensure operational readiness.

Jewar Airport is set to enhance air connectivity for the NCR region, fostering economic growth and creating a global hub for travelers.

4. Gorakhpur Link Expressway

This expressway is a significant stride toward enhancing regional connectivity in Uttar Pradesh, bridging key urban and rural areas.

• Key Details:

- o Length: 91.35 kilometers of controlled-access highway.
- o Cost: ₹7,283 crore.
- o Connectivity: Links Gorakhpur to Azamgarh and connects with the Purvanchal Expressway.

• Economic and Social Impact:

- o Travel time from Gorakhpur to Lucknow will reduce to just 3.5 hours.
- o Improved access to remote districts, fostering economic development and social integration.
- o Reduced environmental pollution through shorter and more efficient routes.

This expressway will act as a vital economic artery for eastern Uttar Pradesh, paving the way for faster, safer, and more sustainable travel.

5. Ganga Expressway

Stretching across 594 kilometers, the Ganga Expressway is set to become India's second-longest expressway, enhancing connectivity across Uttar Pradesh.

• Route and Features:

- o Connects Meerut in western Uttar Pradesh to Prayagraj in the east.
- Includes 960-metre and 720-metre bridges over the Ganga and Ramganga Rivers, showcasing advanced engineering.

• Impact:

- o Drastically reduces travel time between major cities.
- o Boosts economic activities by connecting agricultural, industrial, and commercial hubs across 12 districts and 518 villages.

Originally planned for 2024, the expressway is now slated for completion by November 2025, promising unmatched connectivity in the region.

6. Delhi-Mumbai Expressway

The Delhi-Mumbai Expressway, a massive 1,386-kilometer infrastructure project, is a testament to India's vision for modern transportation.

• Efficiency Gains:

- o Travel time between Delhi and Mumbai will be halved, from 24 hours to 12 hours.
- o Promotes efficient logistics and trade between two of India's largest economic hubs.

• Sustainable Features:

- o Solar-powered lighting systems.
- o Rainwater harvesting.
- o Dedicated wildlife crossings to preserve ecological balance.

Part of India's shift to corridor-based development, this expressway symbolizes the country's commitment to integrating sustainability with infrastructure growth.

2025: A Defining Year for India

The culmination of these projects in 2025 will mark a historic milestone in India's journey toward becoming a global infrastructure leader. From cutting-edge urban mobility solutions in Hyderabad and Mumbai to transformative expressways and world-class aviation facilities, these initiatives collectively promise to elevate living standards, enhance connectivity, and foster economic prosperity across the nation.







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Empowering India's Infra Boom

Indian infrastructure is rapidly driving its growth story. The influence of real time technologies in transforming India's infra development has been momentous is steadily increasing its reach. EPC World News Bureau takes a closer look onto the significant trends driving the sector...



increasing urbanization, infrastructural development, government initiatives, and technological advancements, the market construction design software in India is experiencing rapid growth. Being one of the largest markets in the world, the Indian infra-construction space continues to modernize with the demand for sophisticated design software solutions. The demand dynamics are particularly gaining momentum across various core infra segments like power and energy oil and gas (to name a few), along with the residential, commercial, industrial, and big-ticket transport infrastructure projects.

According to the research studies, the construction and design software market in India is expected to reach a projected revenue of US\$ 950.0 million by 2030. A compound annual growth rate of 11.1 per cent is expected of India construction and design software market from 2024 to 2030. Cloud based technologies leads the segment as the most lucrative deployment solution registering the fastest growth during the forecast period.

A study from Statista indicated, "The market will experience a steady annual growth rate of 6.01 per cent from 2025 to 2029, resulting in a market volume of US\$206.00m by the end of the forecast period. When comparing the global market, it is noteworthy that United States is expected to generate the highest revenue in the Construction and Design Software market, with a projected revenue of US\$ 5,467.00 m in 2025. India's construction and design software market is rapidly growing due to increased urbanization and infrastructure development in the country."

Exploring the Demand Dynamics

The Smart Cities Mission, Housing for All by 2022, and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) have significantly increased the demand for modern construction solutions, including design software. The government's push towards sustainability, energy efficiency, and green buildings is also driving the adoption of software solutions that support BIM, energy modeling, and environmental impact analysis. The growing real estate sector, particularly in major cities like Delhi, Mumbai, Bengaluru, Pune, and Chennai, is being cited by market analysts' as a significant contributor to the demand for construction design software. Developers are increasingly looking for solutions that can improve project planning, reduce construction costs, and ensure compliance with local regulations

The increased inclination towards sustainable constructions is the other noteworthy demand puller. Software tools that support LEED, IGBC, and other green building certifications are gaining a steady traction.

The industry is today a favorite hub for international and domestic players equally. To name a few among the frontrunners based on the popularity and expertise includes –Autodesk's AutoCAD, Revit, and BIM 360 are among the most widely used design tools in the Indian construction market. Revit is particularly popular for BIM implementation in architecture and infrastructure projects. Bentley's MicroStation, ProjectWise, and OpenRoads are commonly used in infrastructure projects like roads, bridges, and airports. Trimble's Tekla Structures and Trimble Connect cater to structural engineering, BIM, and construction management in India. ArchiCAD by Graphisoft is widely used for architectural design and BIM in the Indian market, particularly in high-end residential and commercial projects. CATIA and SolidWorks by Dassault Systèmes are popular for designing complex, large-scale industrial and infrastructure



projects. AVEVA's solutions are used in industrial and infrastructure design projects, particularly in energy, oil, and gas sectors. Procore provides cloud-based construction management software that is gaining traction in India for managing design workflows, schedules, budgets, and communication.

Cloud-based construction software is becoming more popular due to its cost-effectiveness and scalability. Software-as-a-Service (SaaS) models allow firms to access cutting-edge tools without the burden of upfront investments.

Market experts point out an increased usage of construction robotics in the recent years. And a key factor driving this demand is the limited space availability, lack of labour and need for timely errorless constructions. These tech-tools have enabled to increase productivity, achieve the desired outputs by reducing the cost involved in employing human labour and also by minimising the human errors. Safety at work place is the other aspect being largely handled by the robotic technologies in the construction sites today.

Another key change being witnessed is the introduction of connected construction sites or webbed sites. A connected construction site is a network of construction equipment, vehicles, devices, people and sites that communicate with one another via wireless or digital technologies under the umbrella of a single business or organization. Whereas, the widespread likeness to drones is mostly seen in executing site surveys, mapping and for project and safety inspections.

A growing inclination is also seen towards Digital Twin Technology. So much that the term is

today coined as a buzz word for smart constructions. Machine learning and management have enabled to improve the accuracy of simulations and has transformed the process of on-site construction on real time basis thereby easing the data access, analysis and monitoring processes. Briefly said digital twins are today poised to revolutionize the projects by ensuring maximum productivity, increased efficacy and on-time delivery of projects without compromising the cost efficiency.

There is also an increasing demand for globally recognized software to be localized to Indian standards, codes, and regulations. Indian construction companies are adopting software that supports local building norms, standards, and workflows. Localization ensures better compliance with Indian construction codes (like IS codes) and makes the software more relevant to the Indian market. For instance, AutoCAD's Indian version supports all local standards. Similarly, ETABS is localized for seismic design requirements specific to India.

The rise of smart cities in India is the other critical factor leading to greater demand for software that can design, model, and optimize urban infrastructure systems, including transportation, utilities, communication networks. To name a few among the most favored ones are Bentley's OpenCities and Autodesk's InfraWorks solutions.

The use of 3D printing technology is making waves in construction design, particularly in creating building components or even entire structures. Software solutions are now being developed to facilitate the design of 3D-printed structures and optimize their material usage. Tools like AutoCAD, SketchUp, Rhino are few among the popular solutions for designing 3D-printed structures.

The growing demand for faster construction methods has driven interest in modular construction and prefabricated components. Design software is evolving to support the prefabrication process, enabling precise and efficient production of components off-site, which are then assembled on-site. Software tools, like AutoCAD, Revit, Tekla Structures (to name a few), tailored to modular design support efficient planning, reduce errors, and enable the integration of different prefabricated components.

The construction design software market in India is rapidly evolving with a focus on efficiency, automation, sustainability, and collaboration. Technologies like BIM, AI, AR/VR, and IoT are transforming how construction projects are designed, managed, and executed. As India's construction sector continues to expand and modernize, the adoption of these cutting-edge tools will play a crucial role in enhancing the quality, speed, and sustainability of building projects. EPC World



Pic Courtesy: Bentley Sy

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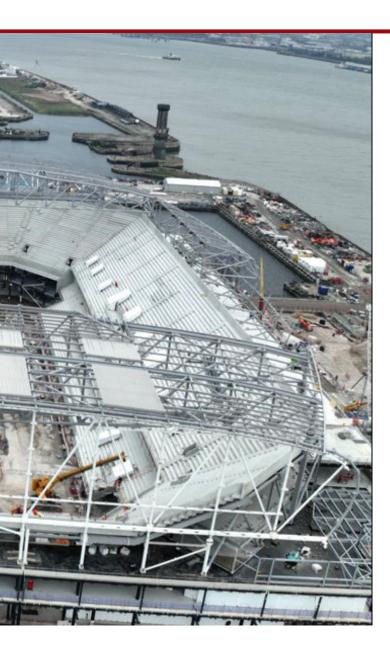
The new stadium at Bramley-Moore Dock in Liverpool will provide Everton Football Club with a modern, iconic home for future fans and football generations.

Laing O'Rourke builds iconic stadium supporting Everton Football Club and regeneration of North Liverpool

SYNCHRO facilitates collaborative, strategic construction methods to deliver the megaproject

Renovating a world-famous waterfront

Seeking to elevate their supporters' match day experience, the English football club Everton FC is developing a new state-of-the art stadium at the abandoned Bramley-Moore Dock on the banks of Liverpool's Mersey waterfront. The new facility is part of a city masterplan to renovate 60 hectares of historic docklands, creating a world-class, mixed-use waterfront quarter that will help rejuvenate Liverpool and boost its economy. To respect the former UNESCO heritage site, Everton is investing GBP 55 million of the project's total budget to preserve, restore, and celebrate the Bramley-Moore Dock's legacy and its cultural assets. Their vision is to bring the



dock back into productive use as a sports venue and community space.

Laing O'Rourke is the main contractor for the 52,888-seat stadium, which will provide an iconic home for the football club and help revive the dockland area. Recognized as the largest single-site private sector development in the country, the GBP 555 million project is forecast to contribute GBP 1.3 billion to the local economy, creating tens of thousands of jobs and attracting 1.4 million tourists to Liverpool annually. Due to be complete in 2024, Laing O'Rourke initiated precise planning from the outset to deliver the large-scale project on time and within budget. "The project went through a rigorous planning procedure, though was met with overwhelming support from the community as it was to aid an overall Liverpool City Dock Development plan and provide the community with jobs and career prospects," said Simon Beards, principal planner at Laing O'Rourke.

Project Summary

Organization

Laing O'Rourke

Solution

Construction

Location

Liverpool, Merseyside, United Kingdom

Project Objectives

- To deliver a world-class waterfront stadium for Everton FC as part of Liverpool's City Dock Development plan.
- To implement 4D dynamic digital construction planning to meet stringent logistical and heritage requirements.

Project Playbook

LumenRT, SYNCHRO

Fast Facts

- The new stadium at Bramley-Moore Dock in Liverpool will provide Everton Football Club with a modern, iconic home for future fans and football generations.
- Laing O'Rourke needed to ensure precise planning and sustainability throughout construction to meet schedule, budget, and preservation requirements.
- They usedSYNCHRO to perform 4D construction simulations, streamlining workflows and managing logistics amid the constrained site.

ROI

 SYNCHRO not only facilitated precise planning of on-site construction works, but it also ensured that the works contributed to the sustainability of the project, limiting environmental impact and helping reach Laing O'Rourke's target of reusing 95% of all on-site materials.

www.epcworld.in 31



Laing O'Rourke used SYNCHRO to perform 4D construction simulations, streamlining workflows and managing logistics amid the constrained site.

"The 4D dynamic and collaborative planning [of] the new Everton FC Stadium project has transformed how we plan, manage and review our delivery outputs on complex construction projects."

Gareth Jacques, Project Director, Laing O'Rourke

Logistical confinements and heritage requirements demand precise planning

Located on a heritage waterfront site, the project required strict conservation sustainability protocols to minimize environmental impact, and presented weather-related and logistical challenges, necessitating precise planning. Prior to construction of the superstructure even starting, an enormous infill of the 10-meter-deep, grade II historic Bramley-Moore Dock had to be carried out, requiring 450,000 cubic meters of fluidized sand. The sandy infill material sits on the dock's soft silts at the bottom of the dock, transforming the maritime port into a solid platform of reclaimed land that will support the stadium and take decades to fully settle. "A decision was made early in the project to retain the dock's

silts, which isn't particularly normal for this type of project," explained Gerald Knights, engineering lead at Laing O'Rourke. "But we did it because it is really great for the environment, although it does give rise to engineering challenges."

Once the initial foundation works were complete, Laing O'Rourke needed to ensure that its construction methodologies for the stadium superstructure adequately addressed the site constraints and limited accessibility, all while adhering to the preservation requirements. From a safety and sustainability perspective, they realized that they needed off-site prefabrication to better implement a design for manufacture and assembly process. However, this process required massive coordination of 11,000 precast concrete components and a supporting steel skeleton frame. Laing O'Rourke had to logistically manage not only the transport of the manufactured modules to the site, but also the heavy equipment and cranes necessary to install the components on site. "This put a heavy reliance on coordination of the work with crane management and clash avoidance due to the heavy costs a delay would incur," said Beards. To successfully deliver the project, Laing O'Rourke sought a combination of advanced digital design and 4D construction solutions to plan everything in a virtual environment prior to any on-site works.



SYNCHRO helped limit the project's environmental impact and reach Laing O'Rourke's target of reusing 95% of all on-site materials.

Leveraging SYNCHRO for collaborative, sustainable construction

"Before a spade went into the ground, the entire stadium was broken down in the digital realm," said Ellis McNulty, digital build lead at Laing O'Rourke. The team built a master federated 3D model, including structural and architectural models, steel work assemblies, and prefabricated concrete walls. They then used SYNCHRO to link the 3D models to the construction schedule. Having already used SYNCHRO to win the project bid, Laing O'Rourke trusted the Bentley solution to help meet project goals, increase communication across the entire project team, and plan and execute the construction works. "[SYNCHRO] became more than just a bidding application and became our means of communication to the whole project team and beyond," said Beards. The SYNCHRO 4D model has been fundamental to the team's collaboration, providing a virtual environment to visualize the construction sequence and assess potential risks and clashes prior to work on site.

Using the 4D model, Laing O'Rourke has been able to precisely plan and coordinate the logistics with suppliers and manufacturers to ensure that the materials and pre-fabricated components arrived on site at the right time. "There are thousands of components on the job, all of which are being produced at our manufacturing facility in the East Midlands: beams, columns, lattice planks. In total, roughly 6,000 components will eventually come out of the factory. We modeled each of those components in the digital environment first to ensure that they will work and to know what order they need to arrive on site," said Knights. By working in a digital environment, Laing O'Rourke was able to efficiently manage cranes and other installation equipment and machinery required for the on-site assembly. This efficiency not only streamlined the works and avoided potential issues, but also ensured a sustainable construction methodology.

4D construction transforms project delivery

Working in SYNCHRO's digital construction O'Rourke environment, Laing optimized planning and scheduling, keeping contractors and stakeholders updated on progress, as well as allowing them to be valuable contributors without them needing to be on the project site. On site, the 4D model is also accessible to the field teams via mobile applications, enabling them to complete their daily activities and provide status updates in accordance with the planned schedule. "The real value has been the opportunity to share the overall plan with the whole team rather than working independently or in a siloed approach," said Beards. Using Bentley's 4D solution enabled construction multiple disciplines and the entire project team to work and collaborate together in a digital environment.

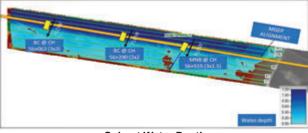
SYNCHRO not only facilitated precise planning of on-site construction works, but it also ensured that the works contributed to the sustainability of the project, limiting environmental impact and helping reach Laing O'Rourke's target of reusing 95% of all on-site materials. The 4D construction platform helped the team manage the logistics of transporting the prefabricated factory components to the dockland area, as well as the seamless coordination of the assembly and installation. This workflow helped solidify the work sequence and avoid on-site equipment clashes. Successfully working in a collaborative 4D digital environment optimized project delivery, saving time and cost, while improving safety and sustainability. Using SYNCHRO has transformed how Laing O'Rourke will deliver their construction projects, with the team implementing these more efficient processes across all future projects. "This project has really allowed us to get more out of SYNCHRO than ever before, and we're very keen to keep pushing the boundaries in what the software will enable us to do," said Beards. EP(World

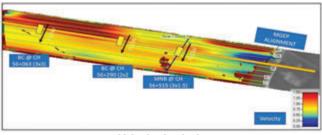


Marion Bouillin is a senior product marketing manager at Bentley Systems. She leads marketing efforts for SYNCHRO Construction, Bentley's digital infrastructure construction management platform.

www.epcworld.in 33

Transformative digitalization of hydrology solutions for resilient and sustainable infrastructure — Meerut Ganga Expressway Project





Culvert Water Depth

Velocity Analysis

s infrastructure development continues to accelerate worldwide, the demand for resilient, sustainable, and efficient solutions has never been greater. In the field of hydrology, with the recent climate change conditions and the need for handling complex riverine scenarios, detailed analysis at a regional level has become a mandate. Integration of advanced geospatial technologies, digital innovations, and data-driven processes are the only way forward for revolutionizing hydrology solutions.

In the NHAI - Meerut Ganga Expressway project (foundation stone laid by Prime Minister Narendra Modi in 2021 & expected completion in 2024); (L&T package 60 km) with 96 cross structures including a major bridge on Ganga, quality and speed was the need of the hour. For attaining precise, fast, sustainable solutions for stormwater, flood mitigation, structure hydrology and river training; we transited completely from





conventional process to end to end digitalization for all hydrology solutions by interfacing 6 different software/ satellite data right from design conceptualization to Client approval stages.

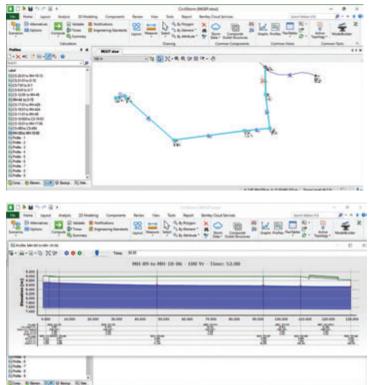
By leveraging the above tools interfacing and generating multiple scenario simulations, we achieved significant process time reduction, design optimization, offering cost-effective, accurate, and sustainable solutions which were widely appreciated by the industry, Client and academia.

Advanced technologies driving the transformation

At the heart of our success lies the effective interfacing of innovative tools and high-resolution datasets that enabled precise and efficient end to end hydrological solutions from data collection to Client approvals. The technologies and methodologies used include:

- DEM datasets (SRTM, ASTER GDEM, and ALOS DSM): To create accurate terrain models for better hydrological and hydraulic evaluations.
- Civil Storm: (Bentley) For storm water drainage design and interface with structures
- QGIS and Google Earth Pro: (Google) For terrain analysis, catchment delineation, and GISbased applications, allowing accurate mapping and identification of hydrological features.
- HEC-HMS: (US Army Corps) For hydrological analysis, including discharge calculations to predict and manage flood scenarios effectively.

HFL in Bentley CivilStorm



• HEC-RAS: (US Army Corps) For hydraulic and flood simulations, inundation mapping, and cross-sectional analysis to ensure robust design outputs.

Results / Business Impacts:

- **1. Time Efficiency:** Reduced project timeline by 93% over conventional (7.5 months to 1.5 months).
- **2. Enhanced Visualization:** Deliverables such as flood maps, velocity maps, and detailed cross-sectional analyses expedited client approvals.
- **3. Adaptability:** Multiple scenario simulations ensured resilient designs under diverse flood and storm conditions and precise outputs.
- **4. Global Benchmarking:** The use of globally recognized softwares like Bentley, Google, US Army Corps; and methodologies ensured compliance with international standards.
- Cost Optimization: Reduced resource use and in-house innovation outperformed international consultants in cost-effectiveness.
- 6. Socio-Environmental: Accurate flood level predictions and flood mitigation measures had a direct impact on immediate environment and safety aspects.
- Horizontal Deployment & Sustainability: We adopt the same technology for all future projects

and this sets the new normal for hydrology design, with the entire team of engineers trained in the advanced digitalization process.

Shaping the Future of Infrastructure

This project demonstrates the critical role of advanced geospatial technologies in enabling resilient and sustainable infrastructure development. By addressing hydrological challenges with

precision and efficiency, we have set a precedence for scalable and replicable solutions that align with modern sustainability goals. Making this a new normal in hydrology designs ensures the horizontal deployment of the digital advancement.

Conclusion

The above hydrology interventions in Ganga Expressway project serves as a compelling case study of how digital transformation, driven by geospatial innovation, can revolutionize speed of delivery and quality of outputs in infrastructure development. It reflects our commitment to delivering groundbreaking solutions that meet today's challenges while laying the foundation for a more sustainable future. As a centralized hydrology solution provider, we now continue to push the boundaries of what is possible, empowering resilient infrastructure that adapts to the demands of an evolving world.



SUDESNA BISWAS Head Hydrology, DGM-Design, Transportation Infrastructure IC L&T

www.epcworld.in 35

It is essential to reflect on the data and trends of the past year to gain insights into what lies ahead. This article delves into key developments from 2024, offering a glimpse into the evolving landscape of India's real estate sector and setting the stage for what to expect in 2025



fter through market navigating corrections and evolving consumer preferences in 2024, the Indian real estate sector continues to exhibit robust performance across all major sectors. In 2024, the Indian residential market witnessed a mixed performance, primarily influenced by the effects of general and state elections, which led to cautious investor sentiment, delayed project launches, and fluctuating demand across various segments. "Housing sales saw a slight decline of 2 percent, but the overall sales value grew by an impressive 16 percent. New launches fell by 7 percent as approval processes slowed down amid the elections. Consequently, the total new supply dropped to approximately 4.13 lakh units from 4.46 lakh units in 2023. Housing sales in 2024 were around 4.60 lakh units, valued at INR 5.68 lakh, compared to 4.77 lakh units worth INR 4.88 lakh in 2023. Average residential property prices in the top seven cities rose significantly by 21 percent, from INR 7,080 per sq ft at the end of 2023 to nearly INR 8,590



per sq ft at the end of 2024. This sharp rise in prices reflects the broader market trends influenced by elections and escalating input costs," says Anuj Puri, Chairman, ANAROCK Group. According to a recent report by Colliers, average housing prices across the top eight markets in India rose 11 percent YoY at INR 11,000 per sq ft during Q3 2024, led by sturdy demand and positive market sentiments. Interestingly, average housing prices have



from INR 7,080 per sq ft in 2023-end to nearly INR

Rise of ultra luxury real estate

8,590 sq ft in 2024-end.

In 2024, India's luxury real estate sector experienced remarkable growth, driven by rising disposable incomes, increased demand from high-net-worth individuals (HNWIs), and a growing preference for premium living spaces. Major metropolitan cities like Mumbai, Delhi-NCR, Bengaluru, and Hyderabad witnessed a surge in luxury housing sales, fueled by factors such as improved infrastructure, strategic project launches, and evolving lifestyle aspirations. As per a report by ANAROCK, The luxury housing segment (priced above INR1.5 crore) maintained strong momentum, contributing the highest share of new residential launches at 33 percent. However, the affordable housing segment saw its share decline to a record low of 13 percent, signaling a possible shift in buyer preferences toward larger, more luxurious homes. According to report by CBRE South Asia, total sales of luxury units during the Jan-Sep'24 period stood at ~ 12,625 compared to ~ 9,160 units during the same period last year. Delhi-NCR, Mumbai, and Hyderabad emerged as prominent markets, accounting for nearly 90 percent of the total luxury housing sales across the top seven cities. Further, Pune recorded a noteworthy increase in luxury sales activity, with 810 unit sales in the same period. In terms of quantum luxury residential unit sales, Delhi-NCR topped with sales of ~5,855

units, a 72% Y-o-Y increase, followed by Mumbai at ~3,820 units, recording 18% Y-o-Y growth. "Although new launches have moderated in the affordable housing segment, developers have stepped up their offerings in luxury and ultra-luxury segments. Average housing prices for spacious dwelling units, particularly 3-4BHK configurations in cities like Bengaluru and Delhi NCR increased by up-to 26 percent YoY during Q3 2024," says Vimal Nadar, Senior Director and Head of Research, Colliers India.

Office market to surge

In 2024, India's office real estate sector demonstrated remarkable resilience despite facing economic headwinds and domestic macroeconomic challenges. However, as the year progressed, improving business confidence, steady economic growth, and a resurgence in demand for flexible and hybrid workspaces gradually revitalised the market. Key metropolitan cities such as Bengaluru, Mumbai, and Delhi-NCR witnessed increased leasing activity, particularly in Grade A office spaces, driven by sectors like IT/ITeS, BFSI, and global capability centers (GCCs). "Indian real estate sector remained resilient in 2024 amid global headwinds and domestic macroeconomic challenges.

Office market faced initial challenges in the first quarter of 2024, with moderate absorption and restricted new completions. The market rebounded significantly in Q2 2024, maintaining strong growth momentum through Q3 2024. During the first nine months of the year, 49 million sq ft was absorbed, marking an 18% increase compared to the same period in 2023," says Shrinivas Rao, FRICS, CEO, Vestian. According to Cushman & Wakefield's latest office data, India's office sector closed 2024 with

office data, India's office sector closed 2024 with historic achievements, recording an unprecedented 89 million square feet (MSF) of gross leasing volume (GLV) across the top 8 cities. In terms of cities, the report adds, Bengaluru led the charge, accounting for 29 percent of India's GLV (25.93 MSF), followed by Mumbai at 20 percent (17.84 MSF) and Delhi-NCR at 15percent (13.14 MSF). Hyderabad and Pune rounded off the top five cities with shares of 14 percent (12.31 MSF) and 10 percent (8.47 MSF) respectively. Notably, Bengaluru, Mumbai and Hyderabad, all recorded their highest-ever leasing volumes this year too. "During the first nine months of the year, 49 million sq ft was absorbed, marking an

18 percent increase compared to the same period in 2023. Similarly, new completions rose by 8 percent year-on-year, reaching 36 million sq ft over the same timeframe. Bengaluru led the absorption in the first nine months of 2024, capturing a 28% share, up from 25% in the same period of 2023. The city also recorded the highest new completions, contributing 30% of the pan-India supply," says Shrinivas Rao.

According to Colliers which has recently facilitated the transaction of 2,07,000 square feet for global cybersecurity company Rubrik at Embassy TechVillage, Bengaluru, 2024 has exhibited consistent demand growth throughout the year, with leasing activity in each quarter surpassing the previous quarter. Bengaluru drove Grade A office space demand, with highest-ever leasing volume of 21.7 million square feet, marking an impressive 40 percent YoY increase. Demand scale-up was also evident in Hyderabad and Mumbai. With 12.5 and 10.0 million sq feet of leasing activity respectively, both cities witnessed double-digit annual office space demand for the first time in 2024. Meanwhile, Delhi-NCR too witnessed healthy space uptake and Grade A demand almost touched 10 million sq feet mark in 2024. "After witnessing higher space uptake in successive quarters, Grade A office space demand in India has broken all past records and registered 66.4 million sq feet of activity in 2024. Three out of the

six major cities witnessed more than 10 million sq feet of annual leasing. 2025 demand can potentially stabilise at elevated levels and annual space uptake exceeding 60 million sq feet is likely to be the new norm over the next few years, says Arpit Mehrotra, Managing Director, Office services, India, Colliers.



Flex spaces also saw the highest number of leases recorded. While technology sector continued to drive annual office space demand with almost one-fourth share in overall leasing, flex spaces accounted for almost one-fifth of the Grade A space uptake in 2024. BFSI and engineering & manufacturing sectors too demonstrated healthy leasing activity, both crossing the 10 million sq feet leasing in 2024. "Flex space activity has grown significantly in 2024. Flex operators accounted for almost 20 percent of the India office space demand in 2024. The occupier preference for managed office spaces augurs well for



leading operators, who are likely to increasingly foray into Tier-II/III cities throughout 2025 and expedite their fund-raising plans through primary markets as well," said Vimal Nadar.

Industrial & warehousing demand to increase

According to a report by Colliers, last year, the Industrial & warehousing segment accounted for the highest share in overall real estate investment volumes at 39 percent, surpassing the office segment. Last year, the Industrial & warehousing segment accounted for the highest share in overall real estate investment volumes at 39%, surpassing the office segment. Manufacturing and industrial growth in the country was robust throughout 2024 and was reflected in the performance of macro-economic indicators such as Manufacturing Purchasing Manager's Index (PMI) and Index of Industrial Production (IIP). "The industrial and logistics sector demonstrated remarkable growth, reaching historic new heights in both demand and supply witnessed in 2024. The absorption is led by sustained demand from the 3PL and manufacturing segments as well as a surge from FMCG, FMCD and E-Commerce. Over the last 3-4 years, demand for compliant and



Grade-A space has been increasing due to changing occupier preferences to meet ESG standards. Rental values have begun to get better for compliant buildings across cities," says Arvind Nandan, Managing Director – Research & Consulting, Savills India.

According to a report by Colliers, the rise of Q-commerce players is likely to catalyze demand for bigger hub-warehouses, across major urban centers. Interestingly, the electronics segment continued to witness heightened traction, with 2X times leasing in the first three quarters of 2024, compared to the corresponding period in 2023. During the first nine months of 2024, large deals (>200,000 sq ft) accounted for about 40% of the overall demand. Although a vast majority of these larger deals came from 3PL players, Engineering and FMCG segments also saw considerable large-sized deals. At the city level, industrial and warehousing space uptake in Delhi NCR was also driven by large sized deals.

Emerging sub sectors to shine

New-age asset classes, including data centers, flex spaces, warehousing, student housing, and senior living, are poised to gain significant traction in 2025, driven by several macroeconomic and social trends. Rapid urbanization, coupled with changing lifestyle preferences, is fueling the need for these specialized spaces. The rise of digitization, the growing influence of Artificial Intelligence (AI) and Machine Learning (ML), and the expansion of quick commerce are further accelerating the demand for these asset classes. As businesses continue to adapt to a more flexible and technology-driven environment, these sectors are expected to grow at a substantial rate.

Office space absorption is projected to peak in 2025 primarily driven by the IT-ITeS, BFSI (banking, financial services, and insurance), and flex space sectors. Flex spaces, in particular, are experiencing significant growth, reflecting the shift toward more flexible and collaborative working environments. In addition to the growth in traditional commercial hubs, tier-2 and tier-3 cities are also expected to witness increased real estate activity. Improved connectivity with metro cities, along with the availability of large land parcels at competitive prices, is making these regions more attractive for both residential and commercial developments. This trend is likely to drive the demand for flex spaces and other real estate segments in smaller towns, presenting an opportunity for developers and investors to tap into these emerging markets. As businesses and residents continue to seek affordable and well-connected locations, tier-2 and tier-3 cities are likely to play an increasingly important role in India's real estate growth in 2025 and beyond.

Indian real estate to march ahead

In conclusion, the Indian real estate sector demonstrated remarkable resilience and adaptability throughout 2024, navigating market corrections and evolving consumer preferences to achieve robust growth across residential, office, and industrial segments. With rising demand for luxury housing, unprecedented office space absorption, and sustained growth in warehousing and industrial real estate, the sector stands poised for continued expansion in 2025. Emerging asset classes and increased activity in tier-2 and tier-3 cities signal a dynamic transformation in India's real estate landscape, offering immense opportunities for developers, investors, and stakeholders in the coming years. EP(World

Indian real estate landscape Key trends and market outlook



India's real estate sector demonstrated resilience in 2024, fueling optimism for 2025. Office leasing hit record highs, while luxury property values surged in key residential markets. The industrial and logistics sectors flourished, and the data center industry experienced rapid growth. With proactive policies and evolving market dynamics, the sector is poised for significant expansion

he Indian real estate market in 2024 has demonstrated remarkable resilience and innate strength, laying the groundwork for what promises to be an even more robust 2025. This year has been pivotal in shaping various sectors including industrial, warehousing, office and residential, with trends indicating ever rising demand from businesses and homeowners alike.

In the office sector, leasing activity is poised to reach hitherto unknown levels, surpassing the records of the last two years. The technology-driven segment remains the dominant demand-driver, as Bengaluru continues to lead the market. Flexible workspace operators have been instrumental in meeting the changing demands of businesses, with their expansions poised to boost leasing activity further in the coming year. Notably, core office markets have seen a sharp rise in rentals, partly owing to limited supply but also on the back of high demand. While supply infusion was somewhat constrained in 2024, a significant influx of space is anticipated in 2025,

fueling even further growth.

The residential sector has also witnessed remarkable developments, particularly in the luxury segment. In bigger cities such as Delhi-NCR, Mumbai, Bengaluru and North Goa, the capital values of luxury properties have appreciated by up to 55-60% on an annual basis, driven by sustained demand. Bengaluru's rental market has seen notable growth, with areas like Whitefield, Indiranagar, and Sarjapur Road experiencing significant rental hikes. This can be attributed in some part to the return-to-office policies adopted by IT companies. Similarly, Gurugram and Bengaluru recorded a substantial increase in the launch of new luxury units, in an evident anticipation of robust appetite for premium housing.

Mumbai has seen a growing preference for larger homes, such as bungalows and prime residences, particularly among professionals in financial services and legal sectors, which are increasingly adopting hybrid work models. Meanwhile, North Goa has continued to emerge



as a hotspot for second homes, with capital values of villas witnessing a year-on-year increase of 16%.

The industrial and logistics sector demonstrated remarkable growth, reaching historic new heights in both demand and supply witnessed in 2024. The absorption is led by sustained demand from the 3PL and manufacturing segments as well as a surge from FMCG, FMCD and E-Commerce. Over the last 3-4 years, demand for compliant and Grade-A space has been increasing due to changing occupier preferences to meet ESG standards. Rental values have begun to get better for compliant buildings across cities. Looking ahead, significant expansion is anticipated for industrial and logistics sector, bolstered by a favorable demand environment, proactive government initiatives and emerging hubs for sourcing, consumption, and distribution, especially in Tier-II & III locations.

India's data centre industry is on the rise too, driven by digital transformation and a growing need for digital infrastructure. With enterprises and consumers adopting AI, IoT, and 5G technologies, this momentum positions India as a promising global data centre hub. The total data centre capacity in India is expected to grow at a CAGR of 23% from 2024 to reach 3,250 MW capacity by 2030. Tier-II and III cities such as Bhubaneshwar, Patna, Lucknow, Jaipur, Kochi, Vizag, Coimbatore, Madurai and Hubli are expected to witness higheractivity with growing demand for edge data centres, while dominant

Tier-I cities like Mumbai, Chennai, Bengaluru, Hyderabad, Delhi-NCR, Ahmedabad and Kolkata continue to grow.

As we enter the second half of a very eventful third decade of this century, the outlook for Indian real estate seems much more optimistic than observed in the last several years. To put things in perspective, unlike this time, there had been no big expectation at the start of any year since the global pandemic cast its shadow four years ago. Even after COVID, ie, 2022 onwards, there has remained a lingering uncertainty on account of geo-political events and elections across the globe. While several of those uncertainties persist, it is becoming increasingly clear that emerging markets like India have got strong foothold and a significant role to play. This bodes well for the country's economy in general, and of course, for real estate. Most asset classes are positioned well to build on the momentum of 2024. The coming year holds immense promise, and all the constituents will be keen on playing an integral role in shaping the future of Indian real estate. EP(World



ARVIND NANDAN
Managing Director –
Research & Consulting
Savills India

We may see several new launches in 2025



We expect 2025 to be a year of stabilization for the Indian residential market with housing capital value growth not matching those of 2024, says ANUJ PURI, Chairman, ANAROCK Group

What are the major takeaways for the industry in 2024 that could shape strategies for 2025?

In 2024, the Indian residential market experienced a mixed performance largely due to the impact of general and state elections. Housing sales saw a slight decline of 2%, but the overall sales value grew by an impressive 16%. New launches fell by 7% as approval processes slowed down amid the elections. Consequently, the total new supply dropped to approximately 4.13 lakh units from 4.46 lakh units in 2023. Housing sales in 2024 were around 4.60 lakh units, valued at INR 5.68 lakh, compared to 4.77 lakh units worth INR 4.88 lakh in 2023. Average residential property prices in the top seven cities rose significantly by 21%, from INR 7,080 per sq ft at the end of 2023 to nearly INR 8,590 per sq ft at the end of 2024. This sharp rise in prices reflects the broader market trends influenced by elections and escalating input costs.

What are the projected trends that will shape the demand for the residential real estate market in 2025?

While 2023 created all-time high peak in housing sales activity, 2024 was not far behind.

As mentioned above, 2024 has seen residential prices appreciate significantly across the top 7 cities in comparison to 2023. However, we may see average residential prices stabilizing in 2025 and the growth rate at which prices grew in 2024 vs 2023 may no longer continue.

Additionally, we may see several new launches in 2025 as listed developers have a significant pipeline of new supply. Amid the general and state elections and hence slow project approval process, they had to hold on to their new supply pipeline in 2024.

Are property prices expected to rise, stabilise or decline in 2025? What are the likely factors that will influence price trends?

If we consider data trends of the top 7 cities in the last five to six years, ie, between 2019 to 2024, then average residential prices have seen the highest rise in 2024 as against 2023. As per ANAROCK Research, the average property prices in 2024 witnessed 21% yearly rise in the top 7 cities as against 2023 – from INR 7,080 per sq. ft. in 2023-end to nearly INR 8,590 sq. ft. in 2024-end. Going forward, we expect 2025 to be a year of stabilization for the Indian residential market with housing



capital value growth not matching those of 2024. Instead, there will be a steady growth amid increased input costs and high demand. In that respect, I think we will continue to see a largely end-user driven residential market.

What key factors are expected to fuel the growth of the residential real estate sector in 2025?

Housing demand continues to remain unabated across cities by the end-users largely. While sales saw a mere 4% yearly drop due to a decline in new launches and investors going into a wait-and-watch mode, 2025 looks promising. Data trends indicate that there is a healthy pipeline of new supply by the listed developers in 2025 because out of the total announced residential development of 253.16 mn sq. ft. over the next few years, merely 23% was launched in the first half of FY 2025. Much will also depend on what the upcoming Union Budget holds in store.

How is the industry tackling challenges such as unsold inventory and project delays?

As per ANAROCK Research, on an annual basis, available inventory declined by 8% in 2024-end across the top 7 cities amid decline in new housing supply during the current year. Over 5.53 lakh units are available for sale across the top 7 cities in India. Interestingly, Pune saw the highest decline of 20% in unsold stock on a yearly basis – from approx. 1,01,220 units by 2023-end to approx. 80,670 units as of 2024-end. Bengaluru and Chennai were the only cities to see a rise in their unsold stock. The fact that cities like Bengaluru have an inventory overhang of just 10 months, the rise in unsold inventory is not of any challenge for the developers.

New-age asset classes are likely to gain traction



Sticky headline inflation and a slender slowdown in GDP growth owing to escalating geopolitical conflicts globally impacted the commercial real estate sector, says SHRINIVAS RAO, FRICS, CEO, Vestian

How has the demand for commercial spaces (IT, retail, warehousing) evolved across different cities in 2024?

Indian real estate sector remained resilient in 2024 amid global headwinds and domestic macroeconomic challenges. Office market faced initial challenges in the first quarter of 2024, with moderate absorption and restricted new completions. The market rebounded significantly in Q2 2024, maintaining strong growth momentum through Q3 2024. During the first nine months of the year, 49 million sq ft was absorbed, marking an 18% increase compared to the same period in 2023. Similarly, new completions rose by 8% yearon-year, reaching 36 million sq ft over the same timeframe. Bengaluru led the absorption in the first nine months of 2024, capturing a 28% share, up from 25% in the same period of 2023. The city also recorded the highest new completions, contributing 30% of the pan-India supply. Hyderabad and Mumbai also played key roles in driving pan-India absorption and new completions during this period.

Retail leasing remained steady in 2024 despite limited supply of Grade-A malls. Fashion, apparel, and entertainment segments

led the absorption, propelled by increased consumption and easy financing options. This robust demand and restricted supply pushed rentals northwards across the major cities in India. The Warehousing & Logistics sector recorded strong absorption of 16.6 million sq ft in the first half of 2024, marking an 8% growth over H1 2023 and a significant 26% increase compared to H1 2022. Micromarkets like Bhiwandi and Navi Mumbai in Mumbai, along with Pune's peripheral areas witnessed heightened demand for warehouses during H1 2024. While weighted average rentals remained under pressure due to volatile market conditions, Chennai, Pune, Kolkata, and NCR still recorded annual rental growth in the range of 5%-30%. Rentals declined by 8%, 7%, and 5% in Bengaluru, Hyderabad, and Mumbai respectively.

Apart from IT, retail, and warehousing, how did segments like co-working spaces, integrated township, data centers, and retail spaces performed?

Flexibility in lease terms, health & safety of employees, and affordability became success mantras for businesses during the pandemic and continued to be so in 2024 as well. This

fueled significant growth in flex spaces as flexible stock reached 67 Mn sq ft in H1 2024, registering an annual increase of 25%. Furthermore, the stock is expected to cross 100 Mn sq ft by 2026. Integrated townships gained prominence in 2024, offering a self-sustaining urban environment that promotes work-life balance by minimizing travel time.

India's digitization efforts, coupled with improved internet penetration and the rise of artificial intelligence and machine learning tools, have driven the growth of data centers in the country. Chennai and Mumbai have emerged as key market leaders, largely due to the presence of sea landing cables.

How did macroeconomic conditions, like inflation or GDP growth, impact commercial real estate and how will these conditions shape the demand in 2025?

Sticky headline inflation and a slender slowdown in GDP growth owing to escalating geopolitical conflicts globally impacted the commercial real estate sector. RBI kept the repo rate unchanged at 6.5% during the current year to tame inflation. While a stable repo rate kept investor sentiment stable in the real estate sector, mortgage rates continued to be on the higher side for developers.

RBI is expected to further ease the monetary policy in 2025 by reducing the repo rate which may boost the demand for real estate assets across the country. The central bank has already reduced CRR (Cash Reserve Ratio) by 50 bps to 4%, boosting market liquidity and enabling growth. Additionally, rapid infrastructure developments are likely to bolster real estate growth.

What are the growth projections for the commercial realty sector in 2025? Which segments are expected to drive demand in 2025?

New-age asset classes such as data centres, flex spaces, warehousing, student housing, and senior living are likely to gain traction in 2025, fueled by rapid urbanization, evolving lifestyle preferences, digitization, rise of AI & ML, and quick commerce.

Office space absorption is expected to peak in 2025 at 65-70 Mn sq ft, majorly driven by

IT-ITeS, BFSI, and Flex Spaces. As mentioned earlier, flex stock is anticipated to cross the 100 Mn sq ft mark by 2026. Moreover, tier-2 and tier-3 cities are expected to gain traction owing to improved connectivity with metro cities and ample availability of land parcels at competitive rates. This may increase the demand for flex spaces in smaller towns, providing an opportunity to expand.

Global Capability Centers (GCCs) emerged as a key driver of demand for office spaces in 2024. What is the outlook for this segment in 2025?

As per industry estimates, India houses over 1,700 GCCs and is likely to reach 2,400 by 2030, majorly driven by the rapid growth in IT, telecom, BFSI, and life sciences sectors. This may lead to an uptick in the demand for commercial real estate across the country.

Sub-dollar office rentals, a rich talent pool of skilled IT professionals, robust infrastructure, and favourable government policies have provided a conducive environment to businesses, resulting in a significant increase in the demand for GCCs in India.

There is a noticeable shift of office spaces to non-metro cities in 2024. Will this trend continue in 2025? Which non-metro cities are emerging as key commercial hubs, and what factors are driving their growth?

The growth of Micro, Small, and Medium Enterprises (MSMEs) and start-ups along with rapid urbanisation and improved connectivity with metro cities are majorly driving the growth in tier-2 cities. To leverage upon the potential of emerging markets and capitalize on relatively lower costs, several MNCs have expanded their footprint to tier-2 cities. The emerging tier-2 cities in India include Lucknow, Indore, Ahmedabad, Jaipur, Kochi, Chandigarh, Nagpur, Bhubaneshwar, Visakhapatnam, Surat, Raipur, Thiruvananthapuram, and Guwahati. Several large-scale infrastructure projects and favourable government policies are likely to provide impetus to these cities, boosting their economic profile. Enhanced connectivity through road, rail, air, and sea is expected to drive the next wave of growth in tier-2 cities across the country. EP(World

Synergy Steels celebrates India's affordable housing surge, paving the way for stainless steel demand

ynergy Steels, one of India's leading stainless-steel manufacturers, commends the remarkable growth forecast in the real estate and infrastructure development sectors. According to the joint report by The Confederation of Indian Industry (CII) and Knight Frank, India's urban centers are projected to require 22.2 million housing units, with 95.2% focused on the affordable housing segment. This demand is driven by urbanization and increasing employment possibilities. This helps promote a favorable environment for stainless steel to expand its base from the

core areas of application into emerging ancillary areas such as construction and infrastructure development. These industries remain pivotal in driving demand for stainless steel, reinforcing its role in India's growth trajectory.

The report reveals that meeting this demand for housing will necessitate the construction of 96,000 affordable housing units per day¹. With the global trends inclined towards sustainable and long-lasting materials, stainless steel with its economical, robust versatile profile stands to gain from this market.

Subhash Chand Kathuria, Chairman, Synergy Steels noted, "The real estate sector is not only a growth engine in itself but also a stimulus for adjunct industries thereby creating demand for construction, heavy machinery and industrial tools. It helps scale up infrastructure development, from connectivity and upgraded roads and railways to new or modernised aviation centres. This creates a ripple effect where levels of economic activity and real estate values increase. This coupled expansion has major potential for stainless steel applications, especially in low-cost housing and infrastructure projects. With its impressive strength-to-weight ratio, corrosion resistance, and lifespan, stainless steel can help reduce lifecycle costs as a long-term solution. It can also reduce corrosion-induced losses resulting in savings to the economy of up to USD 110 billion per year². When we successfully integrate stainless steel into core infrastructure and real estate,



we not only improve cost efficiency, but also meet the sustainability needs of the economy."

Anubhav Kathuria, Managing Director, Synergy Steels said, "Government's push towards real estate development and infrastructure is evident through initiatives such as the recent approval of eight national high-speed corridor projects under which 936-km length highways will be constructed at a cost of ₹50,655 crore and the 12 New Industrial Cities under National Industrial Development Programme (NICDP) with investments worth ₹28,602

Crore³.The PM Gati Shakti also sets the momentum for integrated project execution across transport and energy, communication and social infrastructure. This upswing in infrastructural development creates significant real estate opportunities in proximate regions and further drives material demand for robust and low-maintenance materials such as stainless steel. The Architecture, Building and Construction Sectors (ABC) and Process Industries are expected to have a 22% and 40% share in total stainless-steel demand, respectively⁴. The low cost of stainless steel, along with a 100-year service life and low maintenance, has led stainless steel to become an attractive option for affordable housing and large-scale civil engineering applications. With India's promising growth curve, stainless steel will contribute to sustainable, long-term value creation for these key areas."

Synergy Steels celebrates that the real estate industry is at the cusp of a hyper-growth cycle expected to support a 5-6% growth rate. By 2047, the real estate market will be ready for US\$4.8t, approximately 18% of the predicted US\$26t GDP5. This translates to diversification in stainless steel applications and will be reflected in higher demand for stainless steel, especially in affordable housing, infrastructure and construction industries. Due to its special characteristics of strength, corrosion resistance, and durability, industrial stainless steel is becoming the favoured material for India's infrastructure revival.

¹https://www.knightfrank.com/research/report-library/affordable-housing-in-india-2024-11745.aspx

²https://infra.economictimes.indiatimes.com/news/construction/corrosion-leads-to-losses-worth-usd-110-bl-in-india-annually-issda/102421081

³https://dea.gov.in/sites/default/files/Report%20of%20the%20Task%20Force%20National%20Infrastructure%20Pipeline%20%28NIP%29%20-%20volume-i_1.pdf
4CRISIL Research

⁵https://credai.org/knowledge-center/credai-reports







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- Participation from Central Government, Ministries and State Governments
- International participation and pavilions from various parts of the world
- >> Plant Visits

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bauma CONEXPO INDIA 2024

Redefining India's Infrastructure Vision with a Record-Breaking Edition



he7th edition of bauma CONEXPO INDIA has set a transformative precedent for India's construction, mining, and infrastructure industries. Held from December 11 to 14, 2024, at the India Expo Centre in Greater Noida, this year's edition has been a landmark in the nation's infrastructure journey.

Spanning over 135,000 square metres of exhibition space, bauma CONEXPO INDIA 2024 showcased groundbreaking innovations that drew more than 51,118 trade visitors from 83 countries. The trade fair facilitated 6,298 impactful buyer-seller meetings and unveiled more than 20,000 cutting-edge products and solutions, driving transformative advancements in India's infrastructure landscape. Bringing together 984 exhibitors, the trade fair created a dynamic platform for innovation, collaboration, and sustainable growth, cementing its stature as the largest construction trade fair in North India. These numbers underscore the event's critical role in powering India's infrastructure ambitions, aligning with the nation's aspirations to become a \$5 trillion economy.

The trade fair was officially inaugurated by *Shri Nitin Gadkari, Hon'ble Union Minister for Road Transport and Highways, Government of India.* He marked the occasion by lighting the ceremonial lamp. In his inaugural address, he stated that, "India is rapidly transforming into a global

infrastructure powerhouse with large-scale projects worth ₹70 lakh crore already underway. To sustain this momentum, we must prioritize technological innovation, invest in research & development, and adopt sustainable fuels. The construction equipment industry, being the world's third largest, has immense potential to expand exports and strengthen manufacturing capabilities. I urge industry leaders to focus on advanced technologies and global partnerships to ensure long-term growth and a greener, more competitive future."

Speaking on this occasion, Bhupinder Singh, CEO of Messe Muenchen India, stated: "bauma CONEXPO INDIA 2024 has firmly established itself as a platform that bridges India's unique needs with global expertise, playing its part in shaping the vision of a 'Viksit Bharat.' The strong participation this year highlights India's growing prominence as a hub for innovation and progress in infrastructure. From live demonstrations of advanced machinery to focused discussions on sustainability, emerging technologies, and project execution, this edition showcased practical steps the industry is taking to meet India's ambitious infrastructure goals. It reflects the industry's collective drive to harness innovation and collaboration as key tools to build a resilient, sustainable future for the nation."

Stefan Rummel, CEO of Messe München GmbH, said,"bauma CONEXPO INDIA 2024 has become a trusted platform for the global





construction machinery community, where ideas are exchanged, partnerships are formed, and the groundwork for future growth is laid. This year's edition has further strengthened international collaborations and created opportunities that will contribute to the long-term progress of the industry. It's great to see the collective effort and innovation driving this transformation."

Demtech India 2024 debuted as a collocated show, bringing a dedicated focus to the latest and advancements in demolition technology, further enriching the event's offerings. The NASSCOM Pavilion drew significant attention by spotlighting transformative innovations in construction technology and digital solutions. Meanwhile, the Finance Zone served as a vibrant networking hub, fostering valuable connections between industry stakeholders and leading financial institutions. Adding a global dimension, International Pavilions from countries like Germany, Italy, China, and South Korea, and many others showcased groundbreaking technologies, offering attendees an unparalleled opportunity to explore diverse innovations.

Voices that Matter: Insights from Industry Leaders

Dimitrov Krishnan, Chairman of bauma CONEXPO INDIA 2024 and Managing Director of Volvo Construction Equipment, stated: "This edition of bauma CONEXPO INDIA underscored the industry's role as a driver of change, emphasizing smarter, more resilient infrastructure solutions. By championing cuttingedge technologies, skill development, and sustainability, the trade fair has provided a powerful blueprint for the future. It reflects a unified effort to not only meet current demands but to shape a more sustainable and globally competitive ecosystem."

K. Vishwanathan, All India President of the Builders Association of India (BAI), said: "bauma CONEXPO INDIA 2024 has been a critical trade fair for the construction sector. It provided a platform where industry leaders, contractors, and manufacturers could come together to explore advanced technologies and solutions. Such engagements are essential for driving India's infrastructure growth and ensuring industry-wide progress."



V. Vivekanand, President of ICEMA and Managing Director at Caterpillar India, stated: "bauma CONEXPO INDIA 2024 continues to serve as the cornerstone trade fair for the construction equipment industry. It creates an unmatched environment for industry stakeholders to collaborate, showcase innovations, and strengthen India's position as a global manufacturing hub. The knowledge-sharing and business opportunities here are critical for the sector's future."

The trade fair's strategic influence resonates far beyond its exhibition halls, creating ripple effects across the industry. By showcasing solutions tailored for large-scale infrastructure projects, the event supports India's economic aspirations, accelerating the construction of smart cities, highways, and industrial corridors.

With participation from international exhibitors and buyers, the trade fair positioned India as a global hub for construction innovation, inviting foreign investments and fostering cross-border collaborations. Through partnerships with organizations like ICEMA and CRRI, the event emphasized skilling initiatives, preparing the workforce for the demands of digital transformation

- 135000 square metres of exhibition space brimming with state-of- the-art solutions.
- 51,118 trade visitors from across India and global markets.
- 6,298 buyer-seller meetings fostering impactful collaborations.
- Introduction of 20,000+ groundbreaking products and solutions

and next-gen machinery. By connecting exhibitors, buyers, policymakers, and thought leaders, bauma CONEXPO INDIA 2024 has catalysed partnerships that will steer the sector toward greater resilience and innovation.

This edition was jointly organised by the Builders Association of India (BAI) along with the association Indian Construction Equipment Manufacturers' Association (ICEMA). Leading industry associations that supported bauma CONEXPO INDIA 2024 were Construction Equipment Rental Association (CERA), Committee for European Construction Equipment (CECE), Spanish Manufacturers Association of Construction and Mining Equipment (ANMOPYC), German and Equipment Manufacturers Machinery Association (VDMA), Cranes Owners Association of India (COAOI), Construction Federation of India (CFI) and many more.

Banayenge Viksit Bharat: A Vision in Action

This edition's theme, Banayenge Viksit Bharat, was woven into every aspect of the event. Showcasing technologies that prioritize efficiency, sustainability, and resilience, bauma CONEXPO INDIA 2024 became a rallying point for industry stakeholders striving to shape India's infrastructure future.

Knowledge at the Core: Conferences Driving Change

With 30+ knowledge-sharing sessions, bauma CONEXPO INDIA 2024 went beyond an exhibition. Organized by ICEMA, CRRI, TAI, and CFI, key conferences included:

- Charting India's Infrastructure Growth Journey for Viksit Bharat
- Innovative Techniques in Demolition & Recycling
- Use of Waste Materials in Road Construction

These sessions offered actionable insights, addressing key challenges in sustainability, skill development, and digital transformation.

AM/NS India: Reliable steel solutions partner for construction equipment industry



ArcelorMittal Nippon Steel India (AM/NS India) has been at the forefront of providing world-class steel to the evolving construction equipment industry by collaborating with top global players. In this context, **RANJAN DHAR, Director &** Vice President - Sales & Marketing, shared his valuable insights on the company's role in the steel industry, its efforts to reduce specialty steel imports, its commitment to sustainability, and its strategies for supporting the growth of India's construction equipment sector during a media roundtable at bauma CONEXPO India 2024. Here are some excerpts from the discussion

ArcelorMittal Nippon Steel India (AM/NS India) - a joint venture between two global giants ArcelorMittal and Nippon Steel - has been leading in offering complete solutions to the construction equipment business by providing steel and collaborating with top industry players. The construction equipment industry is crucial for a country in its infrastructure growth phase, and India is on track to become a developed nation by 2047, which will require significant investment infrastructure. As a result. construction equipment (CE) industry plays a vital role.

India's construction equipment sector is robust, with major global players like JCB, Komatsu, Case New Holland, Tata Hitachi, Hyundai, and Caterpillar operating in the country. These companies require high-quality steel and excellent service. Steel, which constitutes 60-70% of the weight in construction equipment, is essential for the durability and performance of machines, particularly in difficult terrains. AM/NS India is proud to be

the market leader in this space, holding the lion's share of the business. Our customer relationships span 10-20 years, and we attribute our leadership to the high quality of our products and our strong relationships. Our parent companies, ArcelorMittal and Nippon Steel, are global leaders in steel technology, allowing us to provide tailored solutions for construction equipment manufacturers. This has made AM/NS India the first choice for steel solutions, especially when new players enter the market.

We are excited about the growth of the construction equipment industry, which is expanding at a robust 12-13% CAGR. We are committed to growing our portfolio in this space.

AM/NS India's role in reducing specialty steel imports and enhancing India's CE hub:

Over the past 15 years, we have significantly reduced the need for importing specialty steel for construction equipment. At our flagship facility in Hazira, Gujarat, we produce

quenched and tempered steel varieties that meet stringent requirements, replacing imports from South Korea, Japan, and Europe. Additionally, our new hot strip mill, set to launch next year, will produce thinner, high-strength steel, catering to diverse industry needs.

By providing high-quality steel solutions, we have enabled our customers to manufacture in India and export globally. This not only supports India's position as an export hub but also contributes to job creation and value addition within the country. This segment is crucial, as it involves high-value, premium steel. Infrastructure and construction account for 40-50% of our product demand, and we are committed to innovation and customer-focused solutions to remain a leader in this space.

Impact of the unorganized sector in the steel industry and expected Government policy support:

The unorganized sector poses challenges due to compromised quality and suboptimal investments. It is crucial for India to focus on producing high-quality steel to ensure the longevity and safety of infrastructure. Inferior materials lead to long-term issues, as evidenced by recent infrastructure failures.

We seek policies that promote domestic demand and profitability, which are essential for supporting significant capital investments. Measures to curb predatory pricing from surplus-producing countries like China are also necessary. Additionally, managing raw material costs, such as iron ore, is crucial to maintaining competitiveness.



On alignment with ESG and sustainability goals:

Sustainability is a key focus for AM/NS India. With 60-65% of our operations being gas-based, we are ahead of our competition in reducing carbon emissions. Our parent companies, ArcelorMittal and Nippon Steel, are global leaders in sustainability initiatives. Additionally, we utilise significant amounts of recycled scrap in our steelmaking process as part of our commitment to the circular economy.

AM/NS India's knowledge sharing with customers:

We conduct knowledge-sharing sessions and cross-functional team meetings to educate customers about the latest steel solutions. Through initiatives like Hypermart, we engage MSMEs, providing technical and value-creation support. These efforts ensure that customers are informed about and can benefit from our innovative products.

Driving innovation, sustainability, and service excellence in CE industry



In an interaction with EPC World, MUKUL DIXIT, India manager of sales and marketing, (Global Construction and Infrastructure) at Caterpillar India, discusses the company's latest offerings, service initiatives, and vision for the future of India's CE industry, positioning Caterpillar as a key partner in the country's infrastructure growth

What products or innovations has Caterpillar showcased at bauma CONEXPO India 2024?

Our focus this year was to highlight our customer-focused solutions. We have launched "Services Commitment" program in India. The Cat® CVA Services Commitment is a set of service and parts guarantees focused on the responsiveness of Cat dealers, in terms of service response times and parts availability.

Another exciting launch at Caterpillar's Services display is the Cat Central App, enabling customers to order Genuine Cat parts at any time, and from anywhere. Cat Central also provides a range of additional benefits such as personalized features to find the right parts quickly, free in-app manuals, and more.

From a product perspective, we introduced the next-generation Cat 120 Motor Grader and three next-generation Cat Excavators: the 323D3, 320D3, and 320D3GC. These machines offer increased fuel efficiency compared with prior models, as well as reduced maintenance costs. For example, Caterpillar's Next Generation excavators, manufactured at our in Tamil Nadu are designed to increase operating efficiency,

lower fuel, and maintenance costs, and improve operator comfort. These machines come with a high-ambient capability of 52oC (125oF) and cold start capability of -18oC (0o F). An optional -32oC (-25oF) cold start is available for extreme cold conditions. It can be used in hot conditions like Rajasthan or high altitudes with cold climates like the north-eastern states and Himalayan region.

Additionally, we displayed the Hindustan 2021F Small Wheel Loader, compliant with CEV Stage V emission norms and also gave visitors an opportunity to explore differentiated services like digital and financial solutions from Cat Finance that enhance the ownership experience as well as sustainability solutions through remanufacturing and rebuilds.

What is Caterpillar's service commitment to its customers in India?

We've introduced a new service commitment focusing on response times and parts availability. The Cat® CVA Services Commitment is a set of service and parts guarantees focussed on the responsiveness of Cat dealers. Cat CVA Services Commitment is offered through a Cat CVA. It provides:

- Service response guarantee: a Cat dealer technician will be on site within agreed timelines of logging your service request
- Parts availability guarantee: maintenance parts delivered as soon as next business day
- Parts availability guarantee: repair parts delivered as soon as second business day

At Caterpillar, we continually look for opportunities to broaden our product and service offerings, to address customers' needs and help them to succeed in their business. Our technology solutions combined with the unmatched support and experience of the Cat dealer network help customers enhance their fleet efficiency and profitability. Our technology solutions:

- reporting machine operating data, customers are now availing solutions like Cat Productivity and VisionLink to help increase uptime and efficiency.
- The improved analytical and service capabilities such as telematics, inspections, SOS Services, as well as eCommerce platforms like www. Parts.Cat.Com, and other dealer specific mobile applications are making it easy for customers to own, operate and maintain the equipment at a click of a button.

All these features represent Caterpillar's commitment to leveraging technology and innovation to improve sustainability of products, services, and solutions for customers. Every product and service get one step closer to fulfilling the purpose of helping customer build a better, more sustainable world.

How is Caterpillar addressing sustainability in its product lineup?

Caterpillar is contributing to a reduced-carbon future by investing in new products, technologies, and solutions to help our customers meet their climate-related objectives. We have committed that 100% of our new products through 2030 will be more sustainable than the previous generation. We will continue to support our diverse range of global customers while executing our strategy for long-term profitable growth.

We work to reduce Greenhouse Gas Emissions (GHG)emissions in our operations while also minimizing water use and waste generation. Environmentally efficient operations align with our strategy for operational excellence across the enterprise.

Our products are built to be rebuilt. They are designed to withstand heavy-duty operating conditions and to be restored and used for multiple lifecycles, reducing the need for raw materials and associated GHG emissions. Designing products and components to be used



If the service response guarantee is not met, customers will receive complimentary service-related benefits. If the maintenance and/or repair parts availability guarantees are not met, customers will receive a parts credit as per the CVA.

Both Indian dealers, Gainwell and GMMCO will be offering the CVA Services Commitment. Customers can contact their local Cat dealer to take out a CVA, providing security and peace of mind through hassle-free maintenance and ownership plans.

Could you elaborate on Caterpillar's technological advancements?

- Cat Product Link[™], along with GPS connect, not only help improve traceability and visibility but also enable the systems to observe, identify and understand different facets of heavy machinery operation without human intervention and improves the maintenance and operation of machines.
- Cat Vision Link takes the guesswork out of fleet management by providing timely equipment data to make informed decisions that help lower cost, boost productivity, simplify maintenance, and improve jobsite safety. With more than 1.5 million connected assets capturing and

throughout multiple service lifecycles is the essence of our remanufacturing approach across multiple products and brands.

Cat Reman gives materials a new life, delivers sustainability benefits to our helps customers and Caterpillar contribute to the circular economy. Caterpillar has been remanufacturing for 50 years of our nearly 100 years in business. Today, remanufacturing is at the heart of our strategy to help customers build a better, more sustainable world. When a component reaches the end of its initial serviceable life, a dealer can return the used component, or core, to Caterpillar. That core is cleaned, inspected, salvaged and remanufactured to original factory quality and performance specifications. We have advanced technology solutions in our portfolio to support our customers' needs in their sustainability journey:

- Autonomous Technology: Caterpillar leads the industry in autonomy. We have the largest autonomous truck fleet in the world, with over 580 machines and more launching every year.
- Alternative Fuels: Fuel choice is one way that customers can reduce lifecycle GHG emissions today. Many Caterpillar products operate on lower-carbon intensity fuels, including biodiesel, renewable diesel and biogas. These fuels reduce lifecycle GHG emissions in the fuel value chain; GHG emissions at the tailpipe are essentially the same as traditional fuels. For example, all Caterpillar diesel engines can operate on 100% HVO (Hydrotreated Vegetable Oil).
- Electrification: Caterpillar is committed to delivering robust electrified products and solutions for our customers. We are gaining valuable experience from our initial introductions of battery-powered equipment and the additional battery-powered machines and chargers under development will help our customers achieve their climate-related objectives. Electric drivetrains and hybrid powertrains employ an

electric drive transmission with power components to improve energy efficiency and productivity.

What is your view on the future of the CE industry in India?

India's construction equipment (CE) industry is poised for robust growth, driven by the nation's focus on infrastructure development. Initiatives like Gati Shakti and the National Infrastructure Pipeline (NIP) channeling substantial investments into roads, railways, ports, airports, affordable and urban development, including smart cities. These initiatives have created a strong demand for advanced construction equipment that meets the evolving needs of the market. Customers today are looking for solutions that enable faster, more efficient project execution while incorporating features like enhanced safety and sustainability. At the same time, the growing emphasis on rural and urban infrastructure development, fueled by programs like the Pradhan Mantri Awaas Yojana, is creating opportunities across metros and Tier-1 and Tier-2 cities.

As a company, we are committed to empowering our customers with solutions that combine advanced technology, financial flexibility, and robust aftermarket support. By focusing on these areas, we aim to help them achieve their goals and contribute to building a better, more sustainable India.

What message does Caterpillar have for its customers and dealers?

For more than 50 years, Caterpillar has been contributing towards the socioeconomic development of the country, through investment in cutting-edge R&D, enabling us to localize our operations, develop robust infrastructure and create job opportunities. To meet the evolving needs of customers, we continuously innovate advanced technological solutions that set a benchmark for productivity, efficiency, safety, and sustainability in the construction equipment industry.

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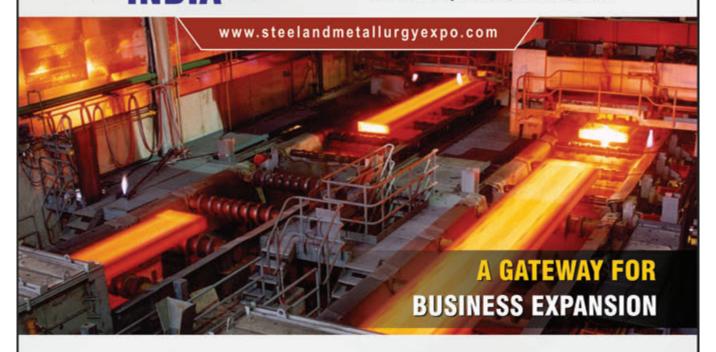
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Propel leads the charge in EV truck innovation



In an interaction with EPC World, SIDDHARTH

KIRTANE, President of EV Sales, Marketing & Services at Propel Industries, shared his vision for green mobility, highlighted the challenges of EV adoption, and outlined Propel's strategies to accelerate India's transition to sustainable transportation.

What are the key products Propel showcased at bauma CONEXPO India 2024?

Propel showcased an impressive range of products at the event, focusing on heavy-duty electric vehicles tailored for specific industrial applications. Among the highlights were the 8X4 470 HEV, India's first smart electric dump trucks, specially designed for off-road mining applications. Another noteworthy product was the 470 eTR, a 4x2 tractor-trailer truck, designed for heavy-duty transportation in logistics and construction. These EV trucks ensure a clean environment, high performance, and a safe, comfortable ride. The all-new EV trucks have fewer mechanical components, resulting in reduced maintenance costs compared to conventional trucks. Additionally, Propel highlighted the 470 MEV, a 6x4 tipper, further solidifying their commitment to providing comprehensive solutions for the mining sector.

What are the main applications for Propel's electric vehicles?

Propel's electric vehicles serve a dual purpose, catering to both off-road and on-road applications. The off-road segment includes operations in quarry and mining segments, where rugged and durable vehicles are essential. On the other hand, the on-road segment is targeted at industries such as cement, steel, and ports, focusing on fixed-route transportation. Propel's diversified portfolio ensures that its electric vehicles meet the unique requirements of these demanding applications.

How does Propel differentiate its electric trucks in terms of specifications?

Propel's electric trucks are designed with advanced specifications to provide exceptional performance and efficiency. Equipped with a powerful 470 HP engine and an impressive 2600 NM of peak torque, these trucks are built to meet a range of operational requirements. Propel offers modular battery options to suit different needs: the 6x4 configurations come with 171 kWh and 256 kWh batteries, while the 8x4 configurations feature 256 kWh and 385 kWh batteries depending on the truck utilization. Operational efficiency is a key highlight, enabling up to 7 hours of continuous operation on a single charge depending on the application. Additionally, the trucks support fast-charging, allowing a full recharge in just 70 minutes with a suitable charger based on the batter capacity, ensuring minimal downtime and maximum productivity.

What advantages do Propel's EVs offer customers?

Propel's electric vehicles offer a host of advantages, making them an attractive choice for customers. One of the most significant benefits is the operating cost, which can be up to 65% lower than traditional diesel vehicles. This substantial reduction stems from the lower energy consumption, and reduced maintenance requirements. Additionally, the payback period for these vehicles ranges between 18 and 24 months, depending on the intensity of usage. Propel's EVs are designed for extended operations, with optimized charging and operational schedules allowing up to 20 hours of continuous use. These factors make Propel's EVs not only cost-effective but also a sustainable choice for industrial operations.

What challenges does Propel face in adopting green CV technology, and what strategies are in place to overcome them?

Despite the promising potential of electric vehicles, Propel identifies several challenges in their widespread adoption. The most pressing issue is the limited availability of public charging infrastructure, which limits the utilization for on-road EV operations. While fixed-route charging setups can mitigate this issue for specific applications, the lack of universal infrastructure remains a significant barrier. Propel emphasizes the need for collaboration between customers and original equipment manufacturers (OEMs) and other stakeholders to develop dedicated charging facilities for seamless These challenges underline operation. importance of strategic investments in infrastructure to accelerate EV adoption.

How is the current government supporting the transition to green vehicles, and what additional measures could further encourage this shift?

The Indian government has introduced several incentives to promote electric vehicle adoption. EVs benefit from a reduced Goods and Services Tax (GST) rate of 5%, compared to 18% for internal combustion engine (ICE) vehicles. Additionally, the government offers accelerated depreciation. Most state governments further incentivize EV purchases by waiving/subsidizing road tax and registration fees. While these measures provide some relief, Propel highlights the need for additional incentives and support to make EVs even more accessible to a broader customer base.

What is Propel's approach to incorporating advanced technologies in its vehicles?

Propel has integrated cutting-edge technologies into its vehicles to enhance safety, performance, and driver comfort. All Propel vehicles comply with CMVR regulations and include advanced driver assistance systems (ADAS). Features such as driver state monitoring for fatigue detection, proximity sensors, and electronic stability control ensure operational safety. Propel's vehicles also include Electronic braking systems (EBS) and Antilock braking systems (ABS), along with fully automated gearboxes for ease of operation. The ergonomic cabin designs further improve driver comfort, making Propel's electric trucks a compelling choice for industrial applications.

How is Propel integrating green technologies into its electric trucks?

Sustainability is central to the design and development of our products. Our electric tipper trucks play a crucial role in reducing carbon emissions and energy consumption, particularly in construction and mining. By using electric power, these trucks promote a cleaner, greener work environment. They feature high-efficiency motors to optimize energy usage without compromising performance.

These advancements in electric vehicle technology significantly reduce the carbon footprint of infrastructure projects, offering a sustainable and cost-effective solution with improved operational performance.

What is Propel's growth outlook for 2025?

Propel has an ambitious growth trajectory, having commenced commercial sales of its vehicles midway through the last financial year, the company expects to sell around 150 units this financial year. Propel's new product introductions are expected to further drive growth in the next financial year. With a vision to lead India's transition to green mobility and sustainable transport, Propel is committed to enhancing electric vehicle penetration across the country. The company's focused approach, coupled with growing market interest, positions it as a key player in the evolution of India's electric vehicle landscape.

Cummins is poised to lead the way in Power Generation



PANKAJ KAPOOR, Vice President - DBU & NRPO

In an interaction with EPC World, PANKAJ KAPOOR, Vice President - DBU & NRPO, and JAMESON **MENDONCA**, Power **Generation Business** Leader - PSBU of Cummins India discusses its latest advancements in power solutions, including the CPCB IV+ gensets and smart fuel management innovations. The duo highlights the company's commitment to sustainability, technological innovation, and customer support, and how their products are set to play a crucial role in India's infrastructure growth and its ambitious Net Zero

What has been the response to your products, specifically the Cummins-powered CPCB IV+ gensets?

The response has been very positive, exceeding our expectations. There is significant interest in aftermarket solutions, particularly in the 125 kVA genset model that we have introduced to the market. Customers are especially curious about the innovations and enhancements in the new CPCB IV+ gensets, which align well with industry needs. The CPCB IV+ gensets have been designed to deliver superior fuel efficiency, reduced emissions, and increased operational reliability, making them ideal for applications across industries. Moreover, the compact design and advanced control systems of these gensets have garnered appreciation for their ease of integration into existing setups. Feedback from customers has reaffirmed our commitment to delivering sustainable and technologically advanced power solutions.

With the surge in demand in the construction sector, what key challenges does Cummins face in providing power solutions, and how are you addressing them?

Cummins has foreseen several challenges, such as fuel and air quality issues, particularly within the construction sector, where equipment often operates in harsh and demanding conditions. Recognizing the critical need for reliable performance under these circumstances, we proactively addressed these challenges during the product development phase. Our gensets are specifically designed to be robust, ensuring seamless operation even in environments where fuel quality may be inconsistent, or air quality is compromised. At the core of this effort is our in-house expertise in key technologies, including Engine Control Modules (ECMs), advanced fuel systems, and other critical components. This vertical integration allows us to create comprehensive solutions that not only enhance durability and reliability but also deliver optimized performance tailored to specific customer requirements. Additionally, Cummins' advanced design philosophy emphasizes predictive maintenance and adaptability, helping customers reduce downtime and operational costs. This holistic, integrated approach underscores our commitment to ensuring that our products remain dependable

emission goals

while meeting the environmental and operational challenges faced by our customers, particularly in sectors like construction where performance cannot be compromised.

Can you explain the CPCB IV+ gensets and their advantages over CPCB II models?

The CPCB IV+ gensets represent a significant technological advancement compared to the CPCB II models. The older CPCB II products were primarily mechanical, whereas the CPCB IV+ gensets incorporate state-of-the-art intelligent systems with advanced after-treatment solutions. These gensets comply with BS VI emission norms, achieving a remarkable 90% reduction in emissions compared to previous models. Additionally, they are designed for improved fuel efficiency, which not only reduces operating costs but also addresses the increasing costs of fuel. India stands out globally as it has mandated stringent emission norms for both standby and continuous gensets, making these products highly relevant to the local market.

You mentioned that CPCB IV+ gensets contribute to a 90% reduction in particulate matter—what impact has this had on construction sites?

The CPCB IV+ gensets have a profound impact on emission norms and operational costs. By reducing emissions by 90%, they contribute significantly to environmental sustainability. Their advanced technology also ensures greater fuel efficiency, leading to lower operating costs. This combination of environmental and economic benefits positions this as a superior choice for businesses seeking compliance with stringent norms while optimizing costs.

What roles do telematics and connected solutions play in your gensets?

Telematics plays a transformative role in our gensets, adding substantial value for users. The genset performs real-time selfdiagnostics, identifying potential issues and sending alerts to both

our Telematics Command Center and the end user. This proactive system enables us to address problems like fuel adulteration before they escalate, ensuring system reliability and reducing downtime. The Telematics Command Center plays a crucial role in this ecosystem by continuously monitoring the genset's performance, analyzing fault codes, and providing real-time support. By leveraging advanced analytics and insights, the command center ensures that any deviations or faults are identified proactively and resolved, minimizing unplanned outages. Furthermore, the data collected through telematics allows us to perform predictive maintenance, providing insights into potential future issues





JAMESON MENDONCA, Power Generation Business Leader, PSBU of Cummins India

and enhancing overall operational efficiency. This seamless integration of telematics with our command center enables us to deliver round-the-clock support and optimized performance, ensuring that our customers benefit from uninterrupted, reliable power solutions.

With India's goal of reaching Net Zero emissions by 2070, how does Cummins envision its gensets contributing to this target?

Cummins is committed to supporting India's net-zero emissions goal through continuous innovation. We have

developed products like the CPCB IV+ gensets, which meet stringent emission standards, demonstrating our commitment to reducing environmental impact. Additionally, we are retrofitting older genset models with advanced after-treatment systems to extend their usability while aligning them with current norms.

Our Recon parts for engines further promote sustainability by enhancing the lifecycle of our products and reducing waste. We are also exploring hydrogenbased solutions, including internal combustion engines and fuel cells, to contribute to green energy initiatives.

Furthermore, Cummins offers cutting-edge solutions like the Cummins' Retrofit Aftertreatment System (RAS) it reduces Particulate Matter (PM), Carbon Monoxide (CO), and Hydrocarbon (HC) emissions by over 90% from genset exhaust, the Dual Fuel (DF) Kit, which enables the use of cleaner fuel alternatives, and RECD-certified products designed to significantly reduce emissions. These innovations reflect our proactive approach to creating greener, more sustainable power solutions, helping India move closer to its net-zero emissions target by 2070.

Could you please elaborate on Cummins' ReCon engines and parts?

Recon parts form a crucial part of our sustainability strategy. They are available for both on-highway and off-highway engines, enabling customers to extend the lifecycle of their equipment. Cummins operates two plants in India dedicated to manufacturing ReCon parts and another facility for highhorsepower (HHP) engine rebuilds. The engine rebuild facility can rebuild all Cummins engines at the end of life. The rebuild engines are the same as new ones and carry the equal warranty. These initiatives align with our commitment to sustainability and provide costeffective solutions for our customers.

What innovations have you introduced for fuel management?

Cummins has introduced the innovative DATUM S smart fuel tank solution, designed to address space and accessibility challenges. Seamlessly integrated with the Repos ecosystem and a mobile app, DATUM S enables app-based fuel delivery, real-time data analytics, and credit facilities. It reduces fuel loss, improves transparency, and optimizes working capital. With advanced automation, it enhances decision-making, minimizes waste, extends system life, and promotes greener fuel management. This solution

allows users to monitor fuel levels in real time, automates refueling, and ensures reliable fuel delivery at consistent costs, addressing fuel adulteration issues for greater efficiency and convenience.

What role do you see for renewable energy solutions, such as hybrid or solar-powered gensets, in the future of construction power generation?

As part of our global strategy, Cummins is heavily invested in hybrid and renewable energy technologies. We are developing battery solutions, hydrogen internal combustion engines, and hydrogen fuel cells. Our approach

Cummins provides extensive support to construction companies through proactive monitoring and assistance. Our command centers continuously monitor gensets in real time, identifying issues like low fuel or DEF levels. Notifications are sent to both customers and our support teams, enabling us to address potential problems before they escalate. This proactive approach has significantly customer satisfaction. improved Additionally, all our dealers and offices are equipped to provide comprehensive support, ensuring seamless adoption of CPCB IV+ gensets.



involves close collaboration with customers to understand their specific use cases and align our product development with market readiness. For instance, we have worked with refineries that utilize surplus clean hydrogen to explore innovative applications. While we continue to monitor infrastructure development for hydrogen and other renewable solutions, our focus is on ensuring that these technologies are market-ready when required.

What kind of support does Cummins offer to construction companies adopting CPCB IV+ gensets to ensure smooth integration and operation?

What are your expectations for 2025 and beyond?

Cummins is highly optimistic about India's growth trajectory. The country's per capita infrastructure development remains significantly lower than global averages, presenting vast opportunities for growth. Our products, particularly those catering to the construction and infrastructure sectors, are well-positioned to capitalize on this potential. We anticipate sustained growth in these sectors, which will drive demand for our innovative solutions. This outlook reaffirms our commitment to supporting India's development goals through advanced and sustainable technologies. EP(World





Latest Technological Advancements

mmann India presented its cutting-edge technology and versatile range of products designed for efficiency, sustainability, and productivity at Bauma CONEXPO India 2024.

With a mission to provide end-to-end road construction solutions, Ammann India showcased a comprehensive lineup of machinery and plants.

During a media briefing, *Dheeraj Panda, Managing Director of Ammann India*, highlighted the company's innovations designed to meet the demands of large-scale infrastructure projects such as highways, metro rails, tunneling, mining, and railways. These solutions optimize efficiency, speed, and cost-effectiveness. For instance, Ammann's advanced asphalt and concrete mixing technologies ensure high output, precision, and durability, crucial for large projects with tight deadlines. The RAH60 recycling system, which produces asphalt mixes using up to 60% recycled materials, promotes sustainability while lowering material costs and project timelines. Additionally, the CC Elba Series Concrete-Mixing Plants offer quick installation and flexible deployment, enabling rapid, high-quality project execution.

Among the new innovations unveiled at the show was a next-generation asphalt-mixing plant that combines robustness with efficiency.

On display were the ABG Pavers, known for their durability and precise paving capabilities, as well as the Apollo kerblaying machines and mechanical pavers, renowned for their precision and efficiency. The Ammann mini paver, designed to make smaller projects more profitable, was also featured.

Visitors also had the opportunity to review Ammann compactors. The soil compactors are known for their superior efficiency, advanced safety features, and comfort. Light tandem rollers, ideal for small compaction tasks, are easy to handle. The versatile tandem rollers offer optimized operator control, while the heavy tandem rollers provide heavy-duty performance on challenging job sites.

Ammann Elba stationary concrete pumps were showcased for their high performance and exceptional durability. Compact versions were also available. Ammann's concrete plants are designed for precise batching, outstanding performance, and consistent quality.

Scale models of Ammann asphalt-mixing plants were also on display, allowing visitors to learn about the advanced recycling capabilities of these plants.

Attendees were invited to explore Ammann's IoT display for a hands-on demonstration of machine and plant connectivity, providing real-time insights into equipment performance. Additionally, the Apollo Mix Master display offered a detailed view of Ammann's next-generation mixing technology.

Commitment to Sustainability and Innovation

Ammann India is dedicated to advancing sustainable construction solutions. The display of the AMMANN VT180 with RAH 60 scale model and RAH 50 Asphalt Recycling Drum emphasized Ammann's focus on green technology and enhanced recycling capabilities. Together with its IoT solutions, Ammann aims to empower customers with data-driven performance monitoring and predictive maintenance, driving efficiency while reducing environmental impact.

Ammann India continues to lead the way in manufacturing high-quality asphalt plants, compactors, and pavers. With a robust service network and a wide range of innovative products, Ammann India remains committed to delivering solutions that are reliable, efficient, and sustainable.

Mahindra unveils



innovative CEV-V range of construction equipment

ahindra Construction Equipment Division (MCE), part of the Mahindra Group, has launched its latest innovations at bauma CONEXPO India 2024, showcasing its commitment to innovation and reliability. The new CEV5 range of construction equipment is designed to set new benchmarks, offering advanced features and compliance with the latest industry standards. The Mahindra pavilion featured a full range of BSV construction equipment, including the RoadMaster and EarthMaster, along with an extensive lineup of trucks for the construction segment: the BLAZO X 48 CLS 10x4 Tipper, BLAZO X m-DURA 35 8x4 Tipper, BLAZO X 28 Transit Mixer with a 7.5 cum capacity drum, FURIO 10 Fuel Bowser with a 6KL capacity, and the BOLERO Camper & Maxx Pik-up.

Speaking on the occasion, Dr. Venkat Srinivas, Business Head - Truck and Bus & Construction Equipment, Mahindra & Mahindra, stated, "Our consistent efforts to introduce cutting-edge products and technologies, along with an emphasis on local manufacturing, exemplify the company's strong support for the 'Make in India' initiative. The introduction of the new CEV5 range of construction equipment at bauma CONEXPO India 2024 reaffirms Mahindra's commitment to the sustainability goals set by the Government of India. The new CEV5 range is a testament to the agility of our engineers, who have developed these products with a clear focus on performance. The range is also equipped with a larger, more comfortable cabin to enhance operator productivity."

Furthermore, it is powered with Mahindra iMAXX advanced telematics, providing strong control over the lower costs of ownership and higher fleet safety. The New CEV5 range of Construction Equipment: An upgrade to existing Earthmaster – Backhoe Loader &Roadmaster – Motor Grader with the higher power of 74 HP & 102 HP engine with CEV 5 emission standards.

Key Products on Display

MCE CEV5 range: Redefining efficiency and compliance

The MCE CEV5 Range debuted with two flagship offerings: The RoadMaster G100, the high-power Motor grader, is designed to meet the forthcoming CEV5 emission standards. Its 102 HP engine and 440 NM torque make it an excellent grader for road construction, especially on state and national highways. The new EarthMaster SX & SXe also complies with CEV5 emission regulations. It is a versatile backhoe loader with a 74 HP engine, a new larger and more comfortable cabin, and iMAXX telematics technology, ensuring improved performance and efficiency.

BLAZO X 48 CLS 10x4 Tipper 29 cum & 18 cum BS6 OBD2 - All New Business solution for our customers in Blue metal, Coal, M-sand, Earthwork and 18 cum specially designed for Iron ore transportation hence providing a wide range of long-haul Tipper applications. The Double Service Guarantee, which offers a 36-hour turnaround time (TAT) and 48-hour uptime to ensure maximum productivity for the users. The BLAZO X 48 10x4



Tipper is more than just a truck; with Mahindra iMAXX advanced telematics, it is a comprehensive solution for the modern transporter. MORE UPTIME AND MORE PROFITS ASSURED.

BLAZO X m-DURA Tipper (22 cum body in 35T Tipper & 16 cum in 28T Tipper & 14 cum Rock body also available in 28T Tipper platform): A New Benchmark in Tipper Technology. BLAZO X m-DURA heralds a new era in tipper technology in India. With its wellproven, robust, and dependable aggregates, this range, available in 28T and 35T GVW categories, sets new standards for performance and durability. The Double Service Guarantee, which offers a 36hour Turnaround Time (TAT) and 48-hour Uptime to ensure maximum productivity for the users, is one of its primary highlights. Furthermore, the range offers up to 10 tipper fleets with roundthe-clock onsite support, giving customers' unmatched peace of mind. The BLAZO X m-DURA is more than just a truck; with Mahindra IMAXX advanced telematics, it is a comprehensive solution for the modern transporter.

BLAZO X 28 (7.5 cum) transit mixer: A completely unique offering for construction segment customers with state-of-the art Cabin with best in class suspension, comfort enhancing productivity, 7 cum drum capacity powered by Kirloskar reliable Slave engine with fuelsmart technology leading to best in class fluid efficiency and better clutch life towards more uptime supported by double service guarantee. Reduced

Service intervals from 12 to 7 which provides TCO advantage to the customers.

FURIO 10 6KL Fuel Bowser – Unique ondoor step diesel delivery business solution for CV customers in the niche segment and GoI Drive towards fuel savings cum ease of business. Mahindra has tied up with Repos Energy to cater to Doorstep Fuel delivery demand through their FURIO trucks - range of Light and Intermediate commercial vehicles. It is a double dispensing Alpha Mobile Fuel Pump built on Mahindra FURIO truck. Door-step diesel delivery will lead to an efficient energy distribution infrastructure and will provide diesel to bulk consumers and industries.

The MTB range of Tipper, Transit mixer and Fuel bowser range comes with Double service guarantees, ie, "Back on Road in 48 hours or get ₹1000 per day". And "36 Hours Turnaround Time from Dealership Workshop or get ₹3000 per day."

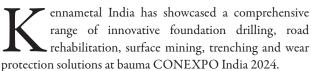
Customer Welfare Programs such as Mahindra SaarthiAbhiyaan aim to provide 1000+ scholarships every year for Truck Driver's Daughters, by direct bank transfer of INR 10,000 and a certificate in recognition of this achievement. Till date cumulatively 10000+ Girl Child of Truck Drivers has been benefitted under the Mahindra SaarthiAbhiyaan program.

MTBD's service network has expanded to 400 plus touch points, including 80 3S dealerships and over 2900 Roadside assistance service points and Spares network of over 1600 retail outlets on key trucking routes across India.

Kennametal India

showcases its

innovative Earthworks solutions



MT Swamy, Regional Leader – APAC, Infrastructure Business, Kennametal India said, "In line with rising infrastructure development in the country, our customers demand higher productivity and performance from their equipment. Kennametal's offerings in road rehabilitation, mining and trenching are developed to perform in the toughest conditions while delivering optimum efficiency. We look forward to partnering with customers on their growth journeys and transforming how everyday life is built."

For road rehabilitation, Kennametal exhibited the next-gen Road King™ tool series that provides superior milling machine performance. Visitors got to see the RK31, RK32, RK43 and RK54 models, featuring 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. Road King's design elements maximize tool life and make tooth changes easy and efficient for operators.

In the foundation drilling category Kennametal displayed its premium 38/30mm shank series conical tools and concomitant holders for hydraulic rigs and diaphragm wall cutters, as well as the KF Series quick change flat cutters, weld on teeth and flat teeth with TC buttons, etc, which are known for maximizing productivity and boosting overall performance. Kennametal also showcased its 25mm-shank conical tools portfolio and holders along with a 'core barrel ring,' designed



by in-house experts as per customers'requirements.

Also on display was foundation drilling conical tools with extra-tough grade KHE16 that enable penetration of the hardest of rocks. In tests comparing it to our standard construction grade, this innovative pick features a tapered tungsten carbide tip that wears evenly with the pick's steel body; provides increased chipping and fracture resistance as well as improved thermal properties; maintains cutting efficiency over a longer time; minimizes downtime required to inspect tools and change out damaged picks; and reduces expenses by extending the life of the machine's holders and drilling tools. Finally, in the surface mining solutions category, Kennametal displayed its conical tools with the industry's first taper tip for surface miners that yield new levels of performance and productivity, as well as KenCastTMwear protection solutions that extendwear part life up to 6X, ultimatelybenefitting customers by preventing costly repairs and downtime.

About Kennametal

Kennametal India Limited is a subsidiary of Kennametal Inc., USA. With over 85 years as an industrial technology leader, Kennametal Inc. delivers productivity to customers through materials science, tooling, and wear-resistant solutions. Customers across aerospace, earthworks, energy, general engineering, and transportation turn to Kennametal to help them manufacture with precision and efficiency. Every day approximately 8,700 employees are helping customers in more than 100 countries to stay competitive. Kennametal Inc. generated approximately \$2 billion in revenues in fiscal 2024. Learn more at www.kennametal.com. Follow @Kennametal: Instagram, Facebook, LinkedIn, and YouTube.

Caterpillar launches



"Services Commitment" program

aterpillar has showcased its world-class products, services, and advanced technologies to help customers build a better, more sustainable world, at the bauma Conexpo India 2024.

Caterpillar announces the launch of "Services Commitment" program. Now as part of Customer Value Agreements (CVAs), Services Commitment represents service response guarantee and parts availability guarantee within an agreed timeframe. Caterpillar experts will be on hand to provide more information, and customers can also take advantage of exclusive show offers.

Another exciting launch at Caterpillar's Services display is the Cat Central App, enabling customers to order Genuine Cat parts at any time, and from anywhere.

"Caterpillar is committed to offering customers an exceptional customer experience throughout the lifecycle of their equipment to maximize their success. With the launch of Services Commitment program in India, Cat equipment will be easier to own," said *Mani Rajan, Director Distribution, Bangalore District, Asia Pacific Distribution.* "By offering Services Commitment as part of their Customer Value Agreements, Cat dealers offer comprehensive, integrated solutions that help customers improve efficiency and productivity when using Cat equipment."

In addition, Caterpillar is celebrating the 5th anniversary of Cat Financial operations in India. Caterpillar Financial Services India (CFSI), a subsidiary of Caterpillar Inc, is a Non-Banking Finance Company (NBFC), which has earned its position as a trusted provider for customers in the construction, mining, and infrastructure sectors. The expanded solutions it offers includes financing for parts, machine rebuilds, maintenance and equipment protection throughout the entire product lifecycle. Now it is even easierwith the "MyCatFinancial" online portal, through which the customers can manage their accounts seamlessly.

Caterpillar productson display

Caterpillar showcased its latest integrated product solutions, including the newly launched Hindustan 2021F Small Wheel Loader, compliant with CEV Stage V emission norms. Guests visiting the Caterpillar booth get an opportunity to look a wide range of machines. These products offer lower fuel consumption, swifter operations and higher productivity compared with prior models. "We want every customer to be more successful using our products, services and solutions. We offer a variety of products for different applications to meet the demand for higher productivity, tighter project completion schedules, competitive cost of operations, safety and more," said Mukul Dixit, India manager of sales and marketing Global Construction and Infrastructure Division. "In addition, this year marks 5 years of Cat Financial in India, and we take pride in empowering our customers through flexible financing solutions, making it easier for them tobuy and own the right equipment."

As part of electric power solutions, generator sets under Cat and FG Wilson brands are on display to showcasetheir capabilities, which are designed to meet local emissions standards while reliably powering various applications.

Additionally, Caterpillar display includes a suite of digital solutions to streamline equipment management and enhance ownership experience. Key offerings include:

- Cat Product Link[™]: A smart operation tool providing realtime data for effective fleet management.
- Cat Grade with Assist: Automates excavator movements for improved precision and efficiency.
- VisionLink: Delivers insightful analytics to enable informed decision-making, reducing costs and improving jobsite safety.

Caterpillar's commitment to innovation and sustainability positions itself as a leader in supporting infrastructure development in India, helping customers to build a better, more sustainable world.

Propel Industries unveils



470 eTR electric tractor trailer truck at bauma CONEXPO India 2024

Propel Industries has unveiled the 4x2 EV Tractor Trailer Truck – 470 eTR at bauma CONEXPO India 2024. Bhupathi Raju Srinivasa Varma, Minister of State for Heavy Industries and Public Enterprises unveiled the truck to promote the use of electric vehicles to meet the sustainability needs of the logistics and construction industry in India.

Equipped with high-capacity lithium-ion batteries, this truck offers an impressive range of up to 350 kms on a single charge. The fast-charging capability allows the batteries to reach

100 percent capacity in just 70 min (for 385 kWh battery), minimizing downtime and maximizing productivity. Additionally, 470 eTR Tractor trailer comes with 3 battery options – 385/480/550 kWh depending on application and range requirements.

In addition, the vehicle assures zero tailpipe emissions and paves the way for cleaner air and a healthier environment. Its powerful 350 kW electric motor, delivers 2600 Nm of torque, ensures robust performance, capable of handling the most demanding tasks with ease.

"This launch marks a momentous stride in EV innovation and Excellence at Propel Industries. More than 1,20,000 cumulative hours went in to testing of power



train and other critical components, said Senthil Kumar, Managing Director, Propel Industries. "Built to endure, the truck features a durable chassis and high-quality materials, ensuring longevity and minimal maintenance. And with a capacity of 55 Tons GCW, it is designed to efficiently transport substantial loads," he added.

470 eTR is also equipped with smart connectivity features, integrating telematics and IoT solutions for real-time data on performance, battery status, and route optimization. This enhances operational efficiency and

provides valuable insights for fleet management.

Commenting on their EV line-up and the 470 eTR, Siddharth Kirtane, President of EV Business, Propel Industries, said, "The 470 eTR Tractor Trailer joins Propel Industries' existing lineup of eco-friendly products, which includes the 470 MEV and 470 HEV designed for mining applications. Notably, the 470 HEV mining trucks are certified for CMVR in the N3G category, demonstrating their roadworthiness, reliability, and safety.

The 470 eTR prioritizes safety with advanced driver assistance systems like ABS, EBS, ESC, HSA, and traction control, ensuring secure driving and construction experience.



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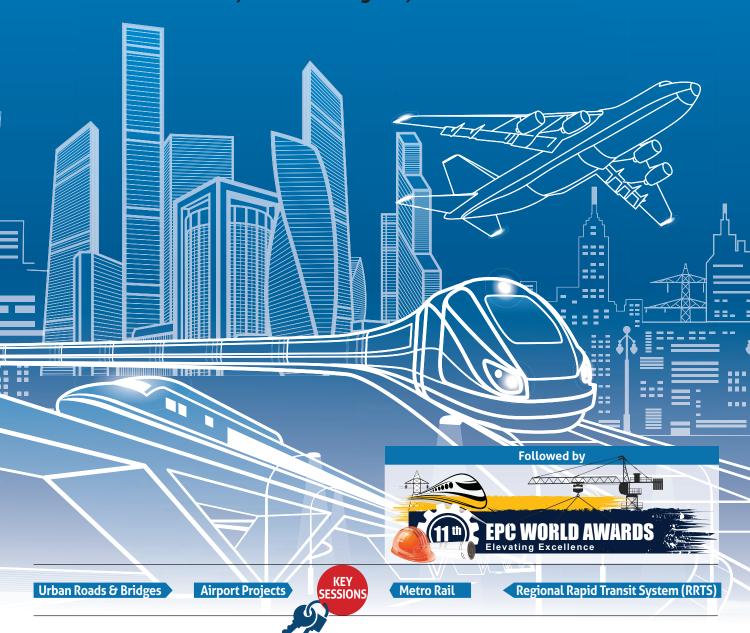
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Cummins India unveils



next-generation power solutions

ummins India, one of the leading providers of power solutions unveiled its advanced range of Aftermarket Solutions for back-up power gensets, construction and mining segments at the 7th edition of bauma CONEXPO India 2024.

The newly unveiled solutions include DATUM S – an extension to the innovative fuel management solutions from Cummins India, OptiNAS+ Hydraulic Oil Filter, and DG Blue Diesel Exhaust Fluid for CPCBIV+ gensets. These solutions have been developed to help customers endure the tough and demanding conditions of construction and mining operations while fully complying with the strict emission standards.

Speaking on Cummins India's participation in the tradeshow, Shveta Arya, Managing Director, Cummins India, said, "For over 100 years globally and 60 plus years in India, Cummins has been innovating to deliver critical power needs of its customers. At bauma CONEXPO, we are happy to showcase our advanced aftermarket solutions, designed to boost efficiency and minimize downtime, alongside our Cummins-powered CPCB IV+ gensets, known for their advanced technology and reliability. As India progresses on its growth journey through investments infrastructure, construction, and mining segments, Cummins remains dedicated to supporting the Government's vision of self-reliance sustainability with innovative power solutions."

Commenting on the launch of advanced range of aftermarket solutions, *Pankaj Kapoor, Vice President, Distribution Business, Cummins India*, said, "Aligned with our brand promise of innovation

and dependability, our new aftermarket solutions are tailored to meet the unique demands of customers in construction, mining, and infrastructure segments. We recognize the critical impact of equipment breakdowns in challenging environments and high-stakes applications, and the effect they can have on project timelines, productivity and costs. Engineered for reliability, solutions optimize operational efficiency, maximize equipment uptime, and provide robust back-up power and coupled with world class service support to keep operations running smoothly."

Cummins-powered CPCB IV+ gensets

In July 2024, Cummins India launched its full range of gensets up to 800 kVA, fully compliant with CPCBIV+ emission norms. At bauma CONEXPO, the company showcased its 125 kVA model. These gensets reduce particulate matter (PM) and nitrogen oxides (NOx) emissions by up to 90%, meeting some of the world's strictest emission norms. Equipped with built-in telematics for real-time performance monitoring and fault code alerts, they enhance efficiency and reliability. Designed for a wide range of applications, including infrastructure, manufacturing, healthcare, real estate, and hospitality, these gensets optimize fuel efficiency, lower emissions, and minimize downtime through proactive maintenance.





Schwing Stetter India showcased



45+ advanced machines, including 25 percent new products

chwing Stetter India has announced a 20 percent revenue growth target for 2025 during its participation bauma CONEXPO 2024 in New Delhi. The company showcased 45+ advanced machines, including 25 percent new products - launched crushers (under the material handling category) and upgraded models across construction and equipment, concreting, batching plants at Hall 14, E01.

The company forecasts that the concrete construction equipment market will experience steady growth in 2025, driven by government initiatives for ambitious infrastructure projects and a surge in construction activity postmonsoon season.

"This year's expo provided the perfect stage for us to unveil our latest innovations. The overwhelming response to our newly launched concrete mixers, pumps, plants, earth moving, road machineries,



specialized machineries and mining equipment, coupled with the significant orders received, reaffirms Schwing Stetter India's position as a leading provider of efficient and reliable construction solutions in India. And, with the addition of crushers, we now offer products of all 5 major segments for the CE industry." said V G Sakthikumar, Managing Director & Chairman, Schwing Stetter India, at the event.

"Favourable macroeconomic conditions, coupled with increasing infrastructure investments

worldwide, are driving this positive trend. In India, the infrastructure sector is poised for exceptional growth, backed by the Government's \$1.4 trillion investment plan under the National Infrastructure Pipeline and a focus on sustainable construction practices," he added.

Schwing Stetter India is expected to close 2024 revenue above ₹5,600 crore and anticipates 20 percent growth in 2025.

JK Tyre unveils

advanced OTR tyres for mining equipment



K Tyre & Industries has launched its latest innovation in Off-the-Road (OTR) tyres, designed specifically for the mining sector at bauma CONEXPO India 2024, further strengthening its comprehensive OTR portfolio. The new offerings include, 17.5-25 VEM 63 L5 for wheel loader, 16.00-25 VEM 99D E3 for Wide Body Dump Truck, 12.00-24 VEM SMOOTH L5S for Load Haul Dumper, 300-15 JET LIFT for Forklift and 10/75-15.3 MPT117 for Self-loading concrete mixer.

The products were unveiled by *Anuj Kathuria, President* (*India*), *and Debasis Khuntia*, *OTR Head at JK Tyre & Industries*. These tyres are engineered for exceptional durability and enhanced performance in tough terrains.

As pioneers in introducing smart tyre technology in India, JK Tyre showcased its innovative Treel (tyre pressure and temperature monitoring) solution at the Expo, specifically designed for OTR tyres. This groundbreaking technology improves efficiency in heavy-duty operations, further reaffirming the company's commitment to advancing smart mobility solutions for the construction and mining industries.

At the inauguration, Anuj Kathuria, President (India), JK Tyre & Industries, stated, "JK Tyre continues to push the boundaries of innovation in the OTR tyre segment, delivering robust solutions designed to enhance productivity. Our latest OTR tyres are built to perform in the most demanding terrains, offering exceptional durability and efficiency for heavy-duty machinery in the mining sector. As a leader in this

segment, we are committed to advancing tyre performance, setting new industry standards, and boosting overall productivity in the OTR sector."

With JK Tyre's extensive research and technologically advanced manufacturing capabilities, the company is catering to the diverse needs of the mining industry with these advanced products. The VEM 63 (L5 Pattern) features an extra-deep tread for extended service life, enhanced by a sidewall protector, broad lugs for stability, and a tough nylon casing for load capacity. While the VEM 99D (E3 Pattern) offers superior handling with its chevron pattern, improved heat dissipation, and an exceptional cut resistance.

The VEM SMOOTH L5S ensures long tread life, stability, and high load endurance, ideal for harsh mining conditions. The JET LIFT provides superior stability and wear resistance with a robust casing and silica-based compound, and the MPT 117 offers excellent mileage, enhanced durability, and high load capacity for both on-road and off-road operations.

From being pioneers of manufacturing India's largest tyre size- 40.00-57, 12 ft. in diameter, weighing approximately 3700 kg's, to entering the Limca Book of Records for the largest off-the-road tyre — the VEM 045 measuring 12 feet in height and weighing approx. 3.4 tons, JK Tyre has been the leader in the Ultra large OTR tyre category. With a robust and comprehensive product range, JK Tyre continues to cater to the diverse needs and requirements of industrial and mining applications, delivering quality and dependability.

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MAINTONIA PLANT EQUIPMENT WORLD





Kirloskar Oil Engines unveils

innovative engineering solutions



L-R: Vinod Menon, Head, Kirloskar Industrial; Rahul Sahai, CEO; Gauri Kirloskar, MD; Dr. Krishna Lakshminarasimhan, CTO, Kirloskar Oil Engines

irloskar Oil Engines has launched its innovative Kirloskar Industrial brand at bauma CONEXPO India 2024, highlighting its commitment to providing cutting-edge engineering solutions for key industrial sectors. Offering design-to-delivery solutions with deep application expertise, Kirloskar Industrial serves sectors including construction, mining, agriculture, firefighting, railways, defense, and marine. Its product range includes engines, power packs, fuel-agnostic solutions, propulsion systems, and integrated physical and digital systems. From powering railway systems to enabling defense operations and driving construction equipment, Kirloskar Industrial delivers reliable, efficient technologies tailored to customer needs.

Gauri Kirloskar, Managing Director, Kirloskar Oil Engines, said, "This launch reaffirms our dedication to innovation and sustainability. Kirloskar Industrial has been at the forefront of engineering excellence, partnering with OEMs and key stakeholders to deliver advanced technology to the Indian and global markets. The introduction of the CEV BS-V engine exemplifies Kirloskar's commitment to sustainable practices and exceptional performance in construction applications. The innovations showcased are

Kirloskar Industrial showcased Industry first technologies like

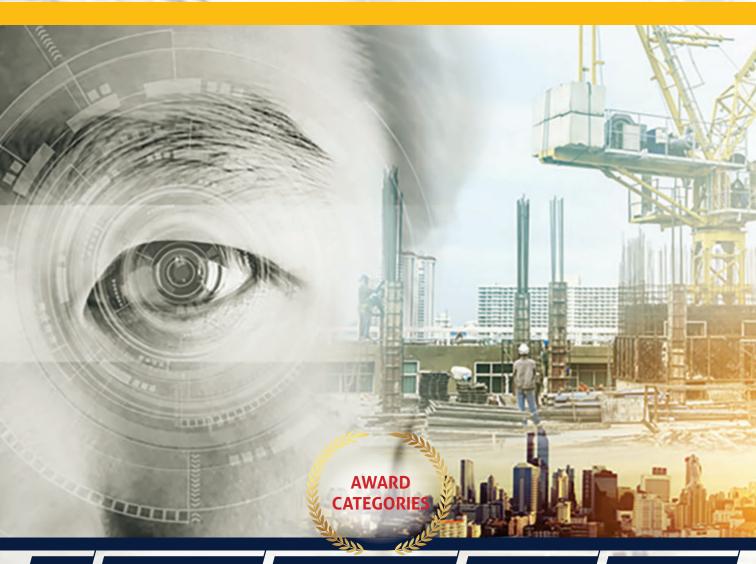
- BSV engines for various construction applications like backhoe & wheel loaders, cranes, material handling, road & concrete equipment.
- Air cooled engines including India's first CNG powered air cooled engine for concrete equipment.
- India's only 1100 HP engine for Mining applications like dump trucks, dozers & excavators.
- Advanced futuristic technologies like hybrid engines
 & hydrogen fuelled internal combustion engines.

more than just products; they are solutions that empower industries to achieve greater performance while meeting global sustainability goals."

Kirloskar Industrial launched its range of CEV BS-V engines introducing products that bring in improved efficiency with easy maintenance. These environmentally friendly range of products comply with the latest emission norms by drastically reducing harmful pollutants like nitrogen oxides (NOx) and particulate matter compared to older BS-IV engines. These engines offer best in class fuel efficiency through our internally developed state-of-the-art hybrid governing system. They also offer a 10% faster response to load changes as compared to the industry benchmark by offering precision control, making it ideal for demanding & heavy-duty construction applications. These latest engines offer a plug-and-play solution with features like integrated on-board controls & after treatment systems that ensure ease of integration and superior performance. Tested over 20,000 hours in diverse and challenging environments, from sub-zero temperatures to altitudes as high as 5,500 meters, Kirloskar Industrial's BSV range of engines promise enhanced reliability and ease of maintenance.

Rahul Sahai, CEO of Kirloskar Oil Engines said, "The range of Kirloskar Industrial's products is a testament of our strong legacy and our commitment to power India's Industrial growth. From India's first CNG powered air cooled engines to developing the only locally manufactured 1100 HP Mining engines, we will continue to bring the most practical indigenously developed products for our customer. The BS-V engine is a major step forward in India's journey towards adopting cleaner and greener technologies. Along with BSV engines, our hybrid & hydrogen fuelled internal combustion engines will help meet the global demand for high-performance, eco-friendly solutions, solidifying Kirloskar Industrial's leadership in sustainable engineering solutions."





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BS-V AX124 backhoe loader and showcases seven breakthrough products

ction Construction Equipment has made waves at Bauma CONEXPO India 2024 with the launch of its groundbreaking BS-V (CE-V) AX124 Backhoe Loader. Alongside this milestone debut, ACE showcased seven innovative products from its diverse equipment portfolio, reaffirming its position as a trailblazer in India's construction industry and its steadfast commitment to the "Make in India" initiative.

ACE leveraged the 4-day expo as a platform to highlight its cutting-edge offerings, including the 75 Ton Rough Terrain Crane, 100-ton Crawler Crane, Aerial Work Platforms (AWPs), Telehandlers, BS-V 30 & 35 Tons Mobile Cranes, Upgraded Motor Grader, and Upgraded Soil Compactor. These products exemplify ACE's mission to revolutionize infrastructure development with advanced, efficient, and ecofriendly solutions.

Manish Mathur, CEO-Cranes, Action Construction Equipment said "We are thrilled to showcase our latest innovations at Bauma CONEXPO India 2024. These machines exemplify ACE's dedication to offering advanced, efficient, and sustainable solutions for the infrastructure sector. By strengthening our product portfolio, we are meeting the growing demands of India's construction industry, aligning with the 'Make in India' initiative, and supporting our customers in their projects."

The newly launched BS-V (CE-V) AX124 Backhoe Loader stood as the centerpiece of ACE's portfolio showcase at the event. Powered by a TATA 74 HP engine, it complies with the stringent Bharat Stage V (BS-V) emission norms. Its bold design features a striking grille, muscular bonnet, and premium cabin, delivering exceptional fuel efficiency and reduced emissions, reaffirms company's commitment to sustainable innovation, meeting the demands of a greener construction landscape.

Among the standout exhibits was the 75 Ton Rough Terrain Crane, engineered for superior performance in challenging conditions. With its robust build and exceptional manoeuvrability, it's an ideal solution for complex projects like mines, dams, bridges, and energy installations. The 100-ton Crawler Crane, with its unmatched lifting capacity and extended reach, caters to large-scale endeavors such as power plants and metro systems, ensuring fuel efficiency and cost-effectiveness.

ACE's Aerial Work Platforms (AWPs) combine advanced safety features with a compact design, making them indispensable for tasks at elevated heights. From high-rise maintenance to outdoor installations, they ensure safety and efficiency. Similarly, the versatile Telehandlers with customizable attachments caters to diverse industries such as warehousing, agriculture, and real estate.

The BS-5 30 & 35 Tons Mobile Cranes, equipped with eco-friendly engines, also stand out for their excellent lifting power, mobility, and ability to move swiftly between project sites, making them indispensable for industrial plants, logistics operations, and metro construction projects. The Upgraded Motor Grader is designed for precision grading and leveling, essential for road construction, airport runways, and railway projects. Its advanced hydraulics and enhanced control systems ensure accurate operations, optimizing productivity. Similarly, the Upgraded Soil Compactor features advanced vibratory technology, ensuring superior ground compaction for stable foundations in heavy-duty applications such as highways, industrial plots, and runways.

Through the introduction of these advanced machines, ACE continues to contribute to the growth of India's infrastructure, providing durable, efficient, and environmentally conscious solutions. With an extensive service network and widespread dealership presence across India, ACE ensures its customers receive exceptional support, making it a trusted name in the construction and earthmoving equipment industry.





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SANY India Redefines



Development with Revolutionary Equipment as 'Chariots of Development'

ith the theme 'Chariots of Development,' SANY India emphasizes its commitment to contributing to India's ambitious vision of Viksit Bharat at 2047 and further driving the infrastructure growth and development.

The product showcase celebrates the pivotal role of construction equipment in enabling efficient project execution, facilitating infrastructure development, and empowering the workforce, including engineers, operators, and technicians. By highlighting the synergy between advanced machinery, infrastructure projects, and the people behind them, SANY India reinforces its dedication to nation-building and creating a prosperous and sustainable future.

Sanjay Saxena, COO Sales, Marketing & Customer Support, Sany Heavy Industry India, said, "Our theme, 'Chariots of Development,' underscores the pivotal role of construction equipment as modern-day enablers of India's journey toward becoming a developed nation. At SANY India, we are committed to driving infrastructure growth with innovative and sustainable solutions, including advanced technologies, fuel-efficient machinery, and electric equipment. These initiatives reflect our dedication to enhancing operational efficiency while minimizing environmental impact. Bauma CONEXPO India 2024 offers a perfect platform to showcase our cutting-edge products and reaffirm our support for India's ambitious Viksit Bharat by 2047 vision."

At Bauma CONEXPO India2024, SANY India unveiled a diverse lineup of state-of-the-art products tailored to meet the evolving demands of modern construction and infrastructure projects. Key highlights include cranes with advanced hybrid power modes and intelligent systems, multifunction piling rigs offering high efficiency and precision, and excavators designed for superior performance, safety, and operator comfort. Additionally, the company showcased aerial work platforms equipped with innovative safety features and digital management systems, reaffirming its commitment to technological excellence and operational efficiency.

Through its participation at Bauma Conexpo 2024, SANY

India celebrates the collective contributions of all stakeholders involved in transforming India's infrastructure landscape. By delivering cutting-edge solutions and fostering sustainable practices, SANY India continues to play a vital role in driving the nation's progress and achieving its development goals.

'Chariots of Development'

Traditionally, chariots have symbolized the journey of mankind, enabling the transport of people and goods, and driving progress. These chariots have historically been pivotal in sustaining and evolving civilizations into the developed societies we see today. Similarly, the journey of Viksit Bharat (Developed India) represents India's ambitious vision of transforming from a developing nation to a developed one. This transformative journey is being "enabled" by countless individuals and organizations who play a vital role in shaping the nation's future. The construction equipment fraternity stands as a key catalyst in this transformation, propelling India's infrastructure growth and bringing the vision of Viksit Bharat@2047 closer to reality. This year, we recognize and celebrate all such individuals and organizations that have tirelessly contributed to this journey and will continue to do so in the future.

The phrase "Chariots of Development" symbolizes the construction equipment industry's integral role in driving the nation's progress. It highlights the synergy between:

- Construction Equipment: Enabling optimal and efficient project execution
- Infrastructure Development & Construction Companies: Realizing envisioned development projects
- Construction Equipment Manufacturers: Providing advanced machines to accelerate construction progress
- People: The dedicated workforce of project engineers, workers, operators, technicians, dealers, and employees who tirelessly contribute to nation-building.

Chariots of Development celebrates the collective contributions that are transforming the vision of Viksit Bharat into a tangible reality. Together, we strive towards a prosperous, inclusive, and sustainable future for all.



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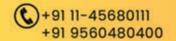
IMAPC IS A PROFESSIONALLY MANAGED INFRASTRUCTURE CONSULTANCY WITH A VISION TO PROVIDE THE BEST SUPPORT TO VARIOUS INFRASTRUCTURE ORGANIZATIONS, (PROJECT DEVELOPERS, INVESTORS, CONSTRUCTION AGENCIES) FOR PERSONALIZED PROFESSIONAL SERVICES WITHOUT LOSS OF TIME, MONEY AND EFFORTS ON DIVERSE COMMERCIAL & TECHNICAL ISSUES.



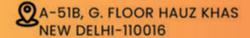
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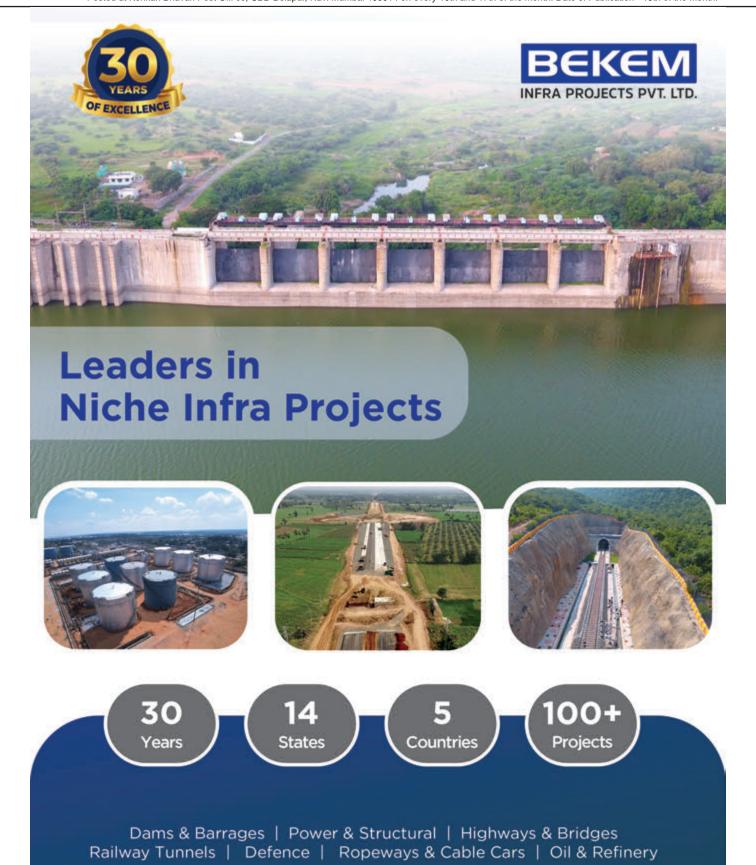
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