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® ₹200 January 2020 • Vol.22 No.4

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- Post-Excon 2019...58
- Construction Software...84
- Interviews: Kavaratti Smart City, Trimble Solutions, Chetak Enterprises...98, 92, 102



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## NEW-AGE TECH TALK!

Construction technology start-ups are introducing innovations that can put an end to the issue of time and cost overruns and the constant increase in labour and material costs. **CW** reports how!...36

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### NEW-AGE TECHNOLOGY!

Construction technology start-ups are introducing innovations that can put an end to the issue of time and cost overruns and the constant increase in labour and material costs. **CW** reports how!



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## CURRENT AFFAIRS

- CPPIB to invest \$600 million through National Investment and Infrastructure Fund
- Piramal Group partners with IIFL Wealth on an AIF to provide last-mile funding for select real-estate projects
- Nitin Gadkari launches road safety data dashboard for Gurugram
- Total real-estate loan equals \$93 billion, over 62 per cent completely stress-free
- Welspun Group Promoters acquires majority stake in One Industrial Spaces
- India's data centre industry to see threefold revenue growth in five years: JLL
- Expect 40 per cent increase in sales: Nitin Gadkari to the construction equipment industry
- Union Cabinet approves NHAI's request to set up an InVT
- WABAG executes one of India's largest water reuse plant

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### Excon 2019



The expo in Bengaluru, held from December 10-14, 2019, spelled big opportunities for the construction equipment sector, offering an expectation of 40 per cent increase in sales for the industry in the near future.

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## CIVIC SENSE

**"For tourism, we have several projects under the PPP model."**

- **Dr Atul Pandey, CEO, Kavaratti Smart City**, shares more on developments and opportunities in the city.

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## ON CONTRACT

**"Proper planning, micro-level monitoring and inventory control are the key to timely execution of projects."**

- **Neeraj Vijay, Director, Chetak Enterprises**, shares more on the company's plans.

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## SPECIAL PROJECT

### Clean, Smart, Quick

Touted to be one of the greenest metro projects in India, Nagpur Metro recently witnessed the completion of the 11 km-long Reach 3 of the East-West corridor of Phase-1.

92

## INTERACTION

**"Inherently, BIM is not a software, it's a process."**

- **Paul Walleit, Regional Director, Trimble Solutions-Middle East and India**, shares more on technology and innovations.



# Building a New Tomorrow



Bengaluru International Airport



375 MLD Sewage Treatment Plant, Jebel Ali, UAE



Mafraq-Ghweifat Highway, Abu Dhabi



400kV Ibri-Izki Transmission Line, Oman



Cable Stay Bridge across River Mandovi, Panaji, Goa



50 MWp Solar Tracker Plant, Theni, Tamil Nadu

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Development of ports provides an impetus to economic activities regionally, nationally as well as globally, shares **Sudhir Kanvinde, Executive Director, Indian Ports Association.**

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It is time our rating agencies play their part in ensuring credibility to bring liquidity and depth to our bond markets, writes **Salil Datar, COO, Essel Finance.**

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**"We are working with a few top builders for complete MEP works for their projects."**

- **Prakasan TP, COO, MEP Business, Sterling and Wilson,** shares more on the company's plans.

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## SPECIAL PROJECT

### Self-Sustainable

Godrej & Boyce's Plant-13 Annexe Building in Mumbai has, over the years, demonstrated consistency in performance in its operation and maintenance.

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## LEGAL ZONE

### Real Estate and State of Homebuyers

Following the finance minister's announcement of setting up a ₹250 billion fund in the nature of Category-II Alternative Investment Funds, real-estate developers will be able to complete construction and revive stalled projects, say **Aradhana Bhansali, Partner, and Manasi Padwalkar, Associate, of Rajani Associates.**

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## COVER STORY

### Architect's Challenges!

From a paucity of projects to issues surrounding bidding, interacting with authorities, fee structures and more, leading architects address the 10 key challenges the public sector presents.

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# EDITOR'S NOTE

## RIGHT TIME, RIGHT PLACE. CORRECT THE COURSE.

Wake up; it's time to face reality. Economic growth will at best touch 5 per cent. Government spending will be tepid and only a sharp decline in oil price could give the government more elbow room. The infrastructure spending of ₹100 trillion in the next five years or the \$5 trillion economy in the next five years will all seem increasingly like a Pied Piper's dream unless the government takes the job of managing economics and finance, seriously and stops meddling with issues that are compounding the obstacles to economic recovery.

Policy interventions can serve to change the sentiment to positive only briefly. What makes the real difference is 'reform'. The moment the **Land Acquisition Act**, provided for the government to purchase land from the rightful owners for the purpose of infrastructure projects at a price four times the ready reckoner rates, our fate was sealed. Land, our principal resource, has been guzzling our resources and the real beneficiaries are 'behind the scenes'. It is time that policymakers take a relook at the act. Land pooling and experiments on making landowners stakeholders in infra projects have been successfully implemented in Navi Mumbai, Pune and Andhra Pradesh. There are lessons and solutions. Considering the very high cost of land, such out-of-the-box solutions are worth exploring further.

Fundraising for critical infrastructure projects is another issue. Informing the nation about the Central Government's intent to spend **₹100 trillion on infrastructure** over the next five years without how this is going to happen has only made the vital private sector 'wait and watch'. At the same time, the divestment of public-sector units (PSUs) needs to be accelerated to bring about accountability and unlock value in several such assets. Fair offloading of such large shareholdings will see a surge interest from both domestic and foreign investors.

India gets about 29 million international tourists a year and earns ₹1.94 trillion from **tourism** fees, or US\$28 billion. The spending of tourists contributing to the economy is an additional benefit. Given the same, our recent spate of politically charged actions have done little to encourage tourists to include India in their itinerary. Even Goa is suffering a 50 per cent



decline in tourists in its peak December month! If we nurture tourism well, it will not just add phenomenal international spending into our economy gasping for growth but will also spur infrastructure investment where private investment could be initiated in a big way.

Commercial mining is the silver lining for 2020 as nearly 200 coal blocks are up for auctioning, constituting 400 million tonne of coal at peak capacity over the next five years. The coal ministry is expected to issue bidding rules for commercial coal mine auctions and hold stakeholder consultations in January.

Although Union Minister Nitin Gadkari enthused the EXCON gathering by indicating an expected spending of ₹2 trillion in the coming year followed by ₹3 trillion in the following year and ₹17 trillion over the next five years on the roads sector alone, it is not clear how the government will have access to these funds. To my mind, our only hope is FDI, which is slated to come from Saudi Arabia and Canada currently. However, our PM can use his charisma to secure funds from Japan, USA, Korea and Germany.

Domestic institutional investors (DIIs) and foreign portfolio investors (FPI) together invested ₹1.43 trillion (around \$20 billion) in 2019, the highest in any single year over the past fifteen years. They probably know something we don't. All eyes on the Budget.

Best wishes for a 'trouble-mukta' year ahead!

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

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## LETTERS

### NEW FACETS OF CONSTRUCTION

The highlight of the December issue was the cover story on 'Enhancing Productivity' that focused on the technological advancements in construction equipment and its benefits to the construction industry. The story emphasised on the fact that the sector should gear up to improve its planning and utilisation of existing machinery, and in turn, boost overall productivity – something I believe all major players must closely follow. It is good to see how the equipment segment has adopted advanced IoT technology to relay and produce better results. Another aspect of the story that has touched base with me is how it broke down productivity and its implications to different companies, giving way to a better understanding of the industry's requirements.

- Abhijeet Singh,  
Mumbai

### YEAR ENDING STORIES

With 2019 drawing to a close, it is always good to read up on future predictions and receive a quick recap of the past year. This is why the Guest Article on construction equipment stood out to me; it explored the downward trend exhibited in 2019 and went on to analyse the possibilities of an upward curve in the coming years. It explicitly also stated that India as a country has had to focus on spurring demand in the infrastructure sector as it is a key economic driver. Further, the story pointed out that the market is predicted to fall by 15 per cent in 2019 but recover by 13 per cent in 2020, a hopeful notion. I hope that the government boosts the industry even more and brings a substantial change in the current downward trend.

- Rakesh Nair,  
Chennai

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### INTERESTING SEGMENTS

I have always enjoyed reading the 'Technology' section of the magazine as it features unique and out-of-the-box concepts. In the December edition, the story focused on the Reliability-Based-Design-Optimisation technique, which turned out to be quite interesting given that it can predict the performance of road surfaces and compare them with other widely used road designs. In my opinion, if we start using this method in its entirety, we could easily eradicate the bad road situation in our country. It would be great if the industry takes this up and implements it. I am sure it will produce good results and will determine the future of the road-construction sector.

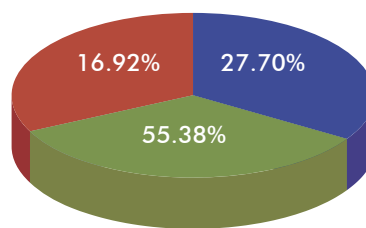
- Pranay Shah,  
Delhi

### TRENDS TO COME

The CW Design Build articles are refreshing to read. In the December issue, the cover story was on the top

### OPINION POLL

As per the recent World Bank's 'Ease of Doing Business' index, India's ranking has improved substantially in dealing with construction permits – to 27<sup>th</sup> from 52<sup>nd</sup>. Has the ease of permits benefitted the construction sector to ensure in-time project execution?



■ Yes: 55.38% ■ No: 16.92%  
■ Can't say: 27.70%

While the Industry 4.0 revolution is set to drive the Indian manufacturing to a 'smart and intelligent manufacturing' hub, do you think India is geared to move from manufacturing outfits of Industry 1.0 and 2.0 to Industry 4.0?

**Yes, No, Can't say**

of my list. The story clearly outlined the opportunities for the specialised contracting services. And, with the Design and Build approach benefitting the construction industry in terms of maximising time and resources in an effective way, companies offering turnkey specialised services have a crucial role to play. There is a big opportunity ahead for the segments of MEP, electrical, plumbing, paints, insulation, lighting and waterproofing, among others.

- Nitin Patil,  
Gujarat

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# NEWS & EVENTS

## AT A GLANCE



- ▲ Two of India's leading think tanks, GRIHA Council and FIRST Construction Council (FCC) have inked an MoU for information sharing in the latest developments in their respective fields of operation. The MoU will see the two organisations work closely in areas of common interest, particularly the construction sector. The two will also work together towards developing programmes on sustainable construction practices in association with stakeholders in the industry.
- CREDAI Telangana recently organised the second edition of its real estate awards 'CREATE – 2019' for the state, to promote and recognise its members for their outstanding contribution to the sector during the last two financial years.



## APPOINTMENT

- Orient Electric has appointed **Salil Kapoor** as the Business Head for its Home Appliances business.



- Piramal Enterprises has announced the appointment of **Jairam Sridharan** as the CEO of its Consumer Finance Business.



- Knight Frank India has appointed **Srinivas Anikipatti** as the Senior Director, Tamil Nadu and Kerala.



- Brigade Enterprise, which holds the exclusive license from New York-based World Trade Centers Association (WTCA) to develop and operate five WTCs in South India, has entrusted **Vineet Vermato** the position of President of WTC.



- ISS Facility Services (India) announced the appointment of **Aksh Rohatgi** as its new CEO and Country Manager.

Godrej Interio has launched its first 'kitchen experience center' in Mumbai. The first-of-its-kind hub highlights the company's design philosophy and allows consumers and interior designers to co-create customised kitchen designs from a myriad range of options.

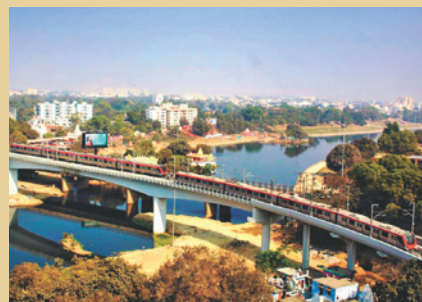
## AWARDS BAGGED

- Three Mindspace Business Parks – Mindspace Airoli East, MMR; Mindspace Madhapur, Hyderabad; and Commerzone Yerwada, Pune; have been awarded The Sword of Honor by the British Safety Council.
- Placebo Fabtech is now the third company in Telangana to have RDSO's approval, which qualifies it to supply directly to the railways

and undertake any fabrication works pan-India for related bridges and structures fabrication works.

- Poddar Housing and Development wins Best Affordable Project of the Year 2019 for Poddar Samruddhi Evergreens along with Integrated Township of The Year for Poddar WonderCity.

Lucknow Metro's structures have been designed to sustain for at least 100 years. What's more, its metro stations and depot have been designed and built as green buildings in accordance with the standards of the Indian Green Building Council. It has also positioned itself to be the first metro-rail project in India to have completed ahead of its initial deadline. In view of this, CW has released a video story on this iconic project and what made it a success. To know more from the makers of the Lucknow Metro, scan the following QR code.



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# CPPIB to invest \$600 million through National Investment and Infrastructure Fund (NIIF)

National Investment and Infrastructure Fund (NIIF) of India and Canada Pension Plan Investment Board (CPPIB) recently announced an agreement for CPPIB to invest up to \$600 million through the NIIF Master Fund. The agreement includes a commitment of \$150 million in the NIIF Master Fund and co-investment rights of up to \$450 million in future opportunities to invest alongside the NIIF Master Fund.

With CPPIB's investment, NIIF Master Fund now has \$2.1 billion in commitments and has achieved its initially targeted fund size. In addition, NIIF Master Fund investors have co-investment rights of \$3 billion, which will enable the NIIF Master Fund to invest at the scale required for India's large infrastructure requirements. The NIIF Master Fund invests equity capital in core infrastructure sectors in India, with a focus on transportation, energy and urban infrastructure.

CPPIB joins Abu Dhabi Investment Authority, AustralianSuper, Ontario Teachers' Pension Plan, Temasek, Axis Bank, HDFC Group, ICICI Bank and Kotak Mahindra Life Insurance as investors in the NIIF Master Fund, alongside the Government of India. CPPIB will also become a shareholder in National Investment and Infrastructure Fund, NIIF's investment management company.



**Sujoy Bose**

**Sujoy Bose, Managing Director & CEO, NIIF**, said, "We are delighted to welcome CPPIB as an investor in the NIIF Master Fund and as a shareholder in our investment management company. CPPIB is a prominent and established investor in India and its investment demonstrates the alignment of the NIIF Master

Fund's investment strategy with what large international investors seek in the infrastructure sector in India. With this fourth close of the NIIF Master Fund, we are pleased that the fund has achieved its initial target size of \$2.1 billion with domestic and international investors of the highest reputation and

quality. We thank all our investors, and the Government of India, particularly the Ministry of Finance and the Ministry of External Affairs, for their strong support."

And **Scott Lawrence, Managing Director, Head of Infrastructure, CPPIB**, said, "The opportunity to invest in, and alongside, NIIF complements our existing direct investment strategy in Indian infrastructure. Through this investment in the NIIF Master Fund, we are also able to deploy capital in additional projects and sectors across the country, providing further long-term opportunities for CPPIB to invest in infrastructure in India."

# Piramal Group partners with IIFL Wealth on an AIF to provide last-mile funding for select real-estate projects

Piramal Group and IIFL Wealth Management have announced a co-investment on an Alternative Investment Fund (AIF) platform to fund select advance stage/last-mile, real estate projects across Tier-1 cities in India. This AIF with a target size of ₹20 billion will be used to provide capital to Tier-1 developers in key markets. The market today presents many opportunities for last-mile finance across projects that require a minimum amount of gap funding for completion.

"The creation of this AIF is in line with Piramal Group's strategy to build newer platforms for co-lending with like minded reputed institutions," said **Khushru Jijina, Managing Director, Piramal Capital & Housing Finance**. "We will initially seed the fund with existing loans from Piramal Group's portfolio while continuing to explore quality deals from the market in future."

With this, Piramal will also be facilitating external capital (on a fund or co-investment basis) alongside its lending business. This will enable it to further grow the lending business through a new co-investment or co-origination model.

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"Piramal's deep domain expertise in real estate and IIFL Wealth's ability to seize the best market opportunities have resulted in a well-structured investment idea that will provide clients an ideal risk-adjusted return," added **Karan Bhagat, Founder, Managing Director & CEO, IIFL Wealth Management.**

IIFL Asset Management has raised a cumulative AUM of ₹70 billion across eight real-estate funds to date. Of these, it has fully exited first two funds, generating gross IRRs of 18-22 per cent.

Piramal Group has a track record of both primary development and wholesale funding in real estate. It also has a fiduciary fund management business across multiple funds and mandates across structured, preferred and pure equity.

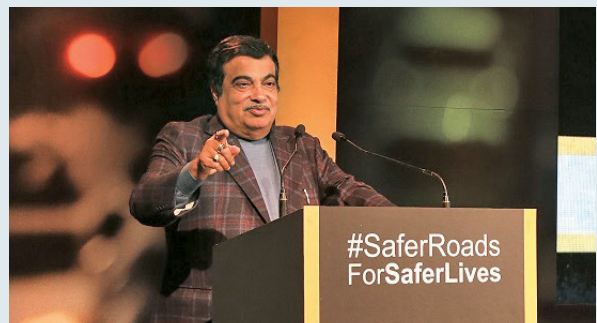
IIFL Wealth is one of the leading wealth managers in the country today, with aggregate assets of around ₹1,700 billion under management, advice and distribution. Headquartered in Mumbai, the company has over 950 employees and a presence in six major global financial hubs and 23 locations in India.

## Nitin Gadkari launches road safety data dashboard for Gurugram

At the recent 'Safer Roads For Safer Lives' event, hosted by Safer Roads For Gurugram (SRFG), **Minister of Road Transport and Highways Nitin Gadkari** launched a road safety data dashboard for Gurugram. The dashboard uses FIR data

collected by Traffic Police of Haryana from the past four years and indicates major factors causing road accidents in the state. SRFG is an outcome of an MoU between Anheuser Busch InBev (AB InBev) and the Transport Department, Haryana Government. SRFG is an autonomous working group comprising corporates, government institutions, corporations, healthcare entities, industry associations, academic institutions, civil societies, data analytics and UN agency.

The road safety data dashboard captures end-to-end data from road collisions and fatalities, thus helping to identify vulnerable spots, assess risk factors and type of accidents, profile high-risk victims and vehicles, and reveal accident data by time and week. By centralising in-depth information dating back to 2016, it aims to serve as a tool for authorities to analyse data on various parameters and devise pre-emptive measures in an efficient and timely manner.



Speaking at the occasion, Gadkari mentioned that road safety is one of the most sensitive and important subjects for the country. There are multiple challenges surrounding road safety like fake driver's licenses, faulty road engineering and lack of adequate awareness among the public at large. He iterated that the Ministry of Road Transport and Highways is committed to undertaking steps to tackle each of these in an effective manner.

**Dr Shashi Tharoor, Member of Parliament,** also launched an e-learning module for 'Youth and Road Safety' developed by SRFG in partnership with UNITAR (United Nations Institute for Training and Research). The 90-minute module has a video-based interface that aims to raise awareness and build capacity among the youth to champion safer road use. It sheds light on the importance of road

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safety measures and provides core skill sets and knowledge on safe road behaviours. It also explores various different ways to help combat road traffic injuries and death.

"As per statistics, a quarter of all road crashes in India involve people up to the age of 35," said Dr Tharoor. "Analysis of road accidents indicates four major challenges to road safety: Corrupt ways of attaining driver's license, negligence while driving, bad road designs and poor emergency responses. Consistent efforts need to be made towards educating the public where they need to respect their fellow road users' space when using the roads. While legislation is the place to initiate these efforts, public education will play a substantial role in creating safer roads for all."

## Total real-estate loan equals \$93 billion, over 62 per cent completely stress-free

Over 62 per cent or about \$58 billion of the total loan advances (\$93 billion) to Indian real estate by banks and NBFCs/HFCs are currently completely stress-free, reveals a study by Anarock Capital. Another 22 per cent (approximately \$21 billion) is under some pressure but can potentially be resolved. In fact, the stress on this segment is largely on recovery of interest, not on principal amount.

That said, \$14 billion (or 16 per cent) of overall lending to Indian real estate is under 'severe' stress, meaning that there has been high leveraging by the concerned developers who have either limited or extremely poor visibility of debt servicing owing to a combination of factors.

**Shobhit Agarwal, Managing Director & CEO, Anarock Capital,** said, "The entire 'severe stressed' loan value in real estate is spread across more than 50 developers. In the telecom or steel industries, default by a single company alone equals a sizable portion of the overall stress in the real-estate sector. Also, every real-estate loan is backed by hard security, which is anywhere between 1.5 times and

2 times. Even if the loan is an NPA, there is enough security for the lenders to get a significant portion of their money back. Even if defaulting developers decide to sell their real estate at a discount, there is enough margin for them to pay back."

Meanwhile, HFCs accounted for the largest share of realty loans equalling 38 per cent, followed by banks, which comprised nearly 34 per cent, while NBFCs have 28 per cent (including loans under trusteeships). Of these, banks and HFCs are much better placed with 70 per cent and 65 per cent of their lending book in a comfortable position. However, it also comes as no surprise that nearly 58 per cent of the total NBFC lending is on a watchlist.

"In retrospect, there has been continuous shrinkage of lending to Indian real estate in recent years by both banks and NBFCs/HFCs amid



non-repayment of some loan dues and NBFC crisis after the IL&FS default," says Agarwal. "One prime reason was that sluggish residential sales over the past few years completely dried up cash flows for many developers, resulting in unsold inventory pile-up and, thus, inability to service their loans. Moreover, some developers have even filed for bankruptcy in the backdrop of stricter regulatory norms under RERA."

However, with both banks and NBFCs/HFCs now doing due diligence before giving loans to developers, the situation is gradually getting ironed out. Nearly 84 per cent of the overall loan amount has little or no stress at all. Going forward, residential sales are likely to pick up because of multiple measures being taken up by the government to provide relief to the sector. This itself will help developers to repay their loan dues.

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# Welspun Group Promoters acquires majority stake in One Industrial Spaces

The promoters of the \$2.7 billion Welspun Group has announced their acquisition of a majority stake in One Industrial Spaces, an integrated fund, development and asset management organisation focused on the warehousing sector in India. The investment was made by the promoters in their personal capacity through a closely held family office investment vehicle.

As a result of the acquisition, One Industrial Spaces will be rebranded 'Welspun One Logistics Parks'. Welspun One will also be the exclusive development manager for a portfolio of ready land assets owned by the promoters in their personal capacity with an estimated value of \$50 million and development potential of over 5 million sq ft of Grade-A industrial or warehousing space. This includes a marquee 3 million sq ft project in MMR.

Commenting on the acquisition, **BK Goenka, Chairman, Welspun Group**, said, "The warehousing sector presents an attractive investment proposition as it provides both development returns as well as stable long-term rental yields. Indian consumers demand same-day delivery both online and offline, which has resulted in an increased strategic backend storage requirement. We have been looking to enter this space as warehousing demand is poised to grow aggressively. I am confident that under the leadership of Anshul Singhal, Welspun One is well placed to scale this business."



**BK Goenka**



**Anshul Singhal**

For his part, **Anshul Singhal, Managing Director, Welspun One**, said, "We are excited to have the backing of the Welspun Group promoters to grow the

vision of the company. Currently, a big challenge for existing players in this space is land acquisition and approvals. As Welspun One, we are uniquely positioned to address these challenges. We can now leverage their deep understanding and experience in buying large land parcels and successfully executing millions of square feet of industrial and infrastructure projects pan India. We believe this will meaningfully improve the overall value proposition for our stakeholders. Our goal is to emerge as India's most preferred warehousing company."

## India's data centre industry to see threefold revenue growth in five years: JLL

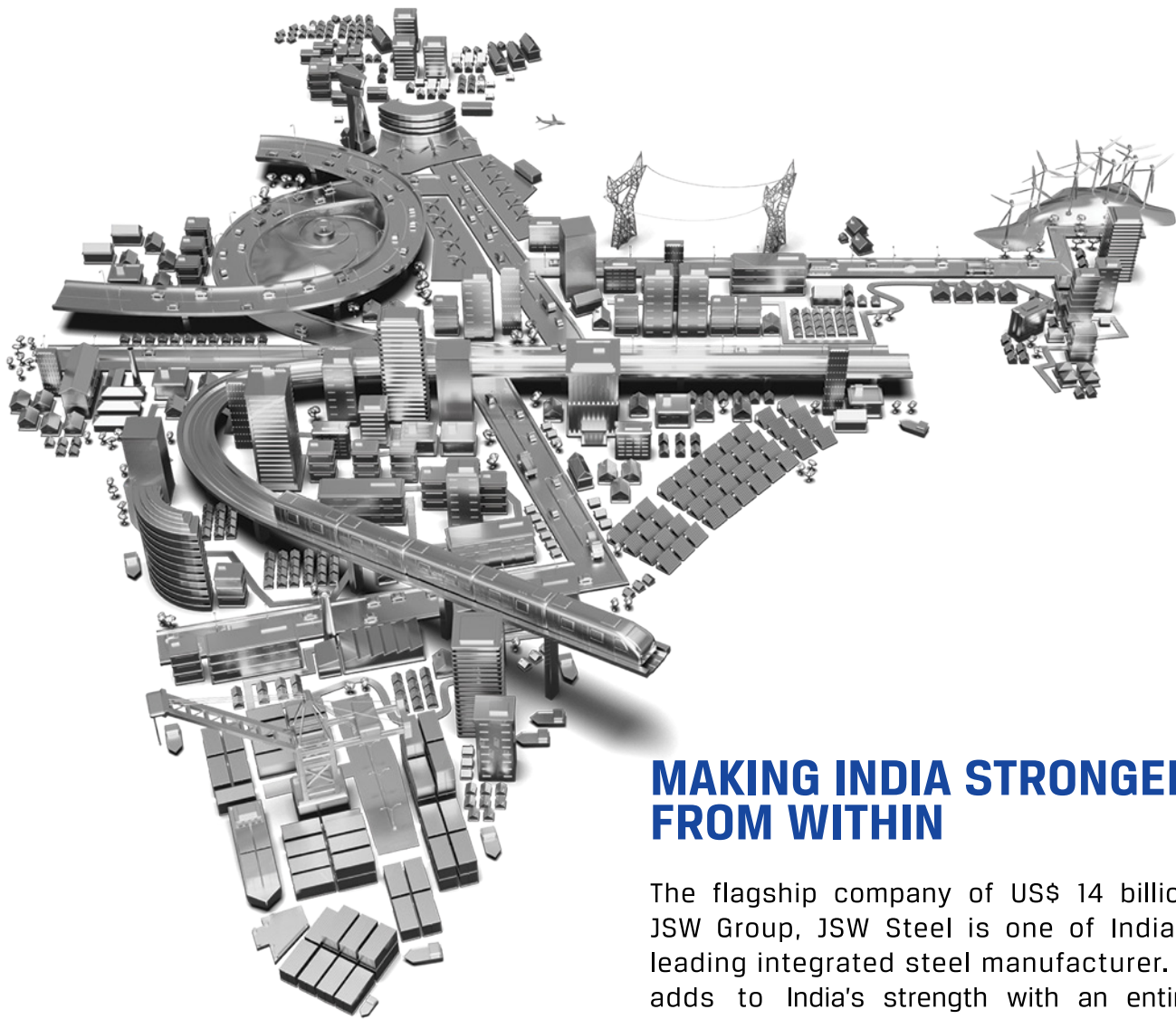
According to JLL's recent report, India's Data Centre Industry – Poised at the Tipping Point, India's data centre industry is set to register a threefold growth in revenue to \$3.2 billion by 2024 and likely to propel the development of additional real-estate space of 7.8 million sq ft to set up data centre facilities.

The country's fast-expanding e-commerce sector, use of smartphones and social media, the government's focus on digital economy and rise in technology-driven start-ups have led to rapid growth in data usage and storage, increasing data centre space. In addition to this, the entry of several global cloud service providers is adding to space take-up.

With the advent of the Internet and mobile phones, India's data centre industry continues to provide data storage, computing and other value-added services. To meet rising demand from data localisation and increasing data usage, India's data centre industry capacity is projected to increase by an additional 431 MW in the next five years from the current levels of 350 MW (design IT power load) in 2018-19, the report added. This expansion is expected to provide a

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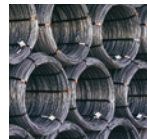
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greenfield investment opportunity of \$4.1 billion to set up data centres.

"India's supremacy in IT is unparalleled," said **Ramesh Nair, CEO & Country Head-India, JLL**. "We're now witnessing an increasing interest for data centre facilities from enterprises and investors, both domestic and international. Businesses around the world continue to work on data consolidation, storage and cloud adoption. As a result, over the past couple of years, we have seen a spike in demand for data centres. While a significant share of this demand and opportunity is coming from investors, greenfield acquisitions for co-location and hyper-scale players and rack migration for



corporates offer tremendous business potential. Lower real-estate cost and skilled manpower, improved quality of power supply and adequate linkages globally with cable landing stations are some key factors driving multinational players to the country."

"There is an unprecedented growth of consumption patterns by cloud companies around the world, and now in India," said **Rachit Mohan, India Head, Data Centre, JLL**. "The anticipated data localisation bill, big data boom backed by IoT and increasing OTT consumption of data is fuelling opportunity for large global and Indian colocation data centre operators to design and build high-quality data centre infrastructure in India. This digital revolution will continue to attract significant investments in years to come."

"India's 578 million mobile phone (wireless) data users – the world's second-largest digital population – has been consuming data at the speed of 1,500 GB per second and this is expected to increase further," said, **Dr Samantak Das, Chief Economist and Head of Research & REIS, JLL India**. "This will bring in the need for more space and is expected to bring in greenfield investment opportunity of \$4.1 billion to setup data centres."

Growing concerns over cyber security, data privacy laws and compliances are transforming markets worldwide. Increasing demand for cloud computing solutions necessitates data centres that are optimised for data storage and speed to deliver the best user experience possible, the report adds.

## Expect 40% increase in sales: Nitin Gadkari to the construction equipment industry

Delivering his inaugural address at CII's 10<sup>th</sup> edition of Excon 2019 in Bengaluru, one of South Asia's leading construction equipment trade fair, **Nitin Gadkari, Minister for Road Transport & Highways, and Micro, Small and Medium Enterprises, Government of India**, has said that the prime minister's vision is to make India a \$5 trillion economy. To achieve this goal, the government is embarking on major infrastructure and industrial projects worth ₹100 trillion.

He emphasised that the construction equipment industry could hope to expect a 40 per cent increase in sales in the near future, as the government is pumping huge amounts of investment in road and other infrastructure projects such as the development of waterways, airports, ports, and smart cities. "But the private sector should focus on bringing down the cost of construction and pollution," he urged.

The minister further advised the private players in the construction industry to focus on mechanisation, adoption of advanced technologies and global best practices, usage of LNG and bio-fuels, and innovations in using waste materials as raw materials for their construction projects in order to reduce the cost of construction and pollution. He also directed attention towards the Centre's efforts to boost the roads segment.

"For the road sector alone, the Centre is investing ₹2 trillion this year. Investment for next year will increase to ₹3 trillion," he said, adding that within the next five years, total government spend on the road infrastructure will be about ₹17 trillion.

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### WABAG executes one of India's largest water reuse plant

VA Tech Wabag (WABAG) has successfully executed the Tertiary Treatment Reverse Osmosis (TTRO) Plant for Chennai Metropolitan Water Supply & Sewerage Board (CMWSSB) in Koyambedu.

One of the largest and technologically advanced water reuse plants in India, the project marks a decisive step in the direction of municipal water recycling, thereby promoting an alternative and viable model for urban water governance.

With a capacity of 45 MLD, the TTRO plant has been designed and built by a consortium comprising WABAG and IDE. The project worth ₹4.82 billion was awarded by CMWSSB. In addition to design and build, WABAG will also be responsible for the operation and maintenance of the facility for 15 years.

The treated water will cater to the water requirements of the industrial hub in South Chennai via a 60 km pipeline. The plant will effectively save over 16 billion litre of freshwater annually, thus securing water supply for the people of Chennai and ensuring industrial water security, leading to economic prosperity.

**Rajneesh Chopra, Global Head-Business Development, VA Tech WABAG**, says, "WABAG expects this model to soon be replicated across major cities. The company till date produces over 25,000 MLD of water and treats over 30,000 MLD of wastewater." He adds that in the next two years, the company plans to add another 2,400 MLD. "We have operations in 30 countries, and going forward, we are looking at entering South Africa as there are immense opportunities. With growing importance for recycling and reuse of water, the company sees a strong growth momentum."

The project has been funded by the Government of India under the AMRUT programme and the Government of Tamil Nadu under the Tamil Nadu Investment Promotion Programme (TNIPP), demonstrating the local authorities' commitment to making Chennai water resilient.

### NHAI receives approval to set up an InvIT

The National Highways Authority of India (NHAI) has received the Union Cabinet's approval for setting up an InvIT – permitting the body to monetise its completed national highways and therefore, fulfil its funding requirements, reports reveal.

With this move, investors will be offered a SPV, which is a bundle consisting of highway projects, under InvIT. It is estimated that the SPV will be traded on the stock market and all returns will be linked to the InvIT's performance on the capital market.

The approval to set up the trust is crucial for agencies such as NHAI that rely on a steady flow of funds to ensure that all projects are completed on time – it gives a leeway from the limited funds these agencies bank on.

**Rajeshwar Burla, Vice President, Associate Head-Corporate Ratings, ICRA**, says, "There has been a lot of debate in recent times about the need for NHAI to focus on asset monetisation and tap alternate funding avenues, viz, TOT and InvITs. NHAI's borrowings are expected to more than double by FY2022 to fund the Bharatmala Pariyojana programme. In this context, the recent CCEA decision authorising NHAI to set up InvIT is a positive." He adds, "With this approval, NHAI's InvIT – the first from a central public-sector enterprise – could hit the market by the second half of 2020. NHAI has around 11,000 km of national highways, which are public funded with an annual toll collection of around ₹70.90 billion (in FY2019), which can be monetised through the InvIT route." He goes on to share that InvIT offers good opportunities to long-term institutional investors including pension, insurance and sovereign funds that are bullish on long-term growth story of India and are keen on acquiring operational and mature toll road assets, which are devoid of execution risks.

Going by reports, the approved InvIT will be set up by NHAI in accordance with the Indian Trust Act, 1882, and Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014.



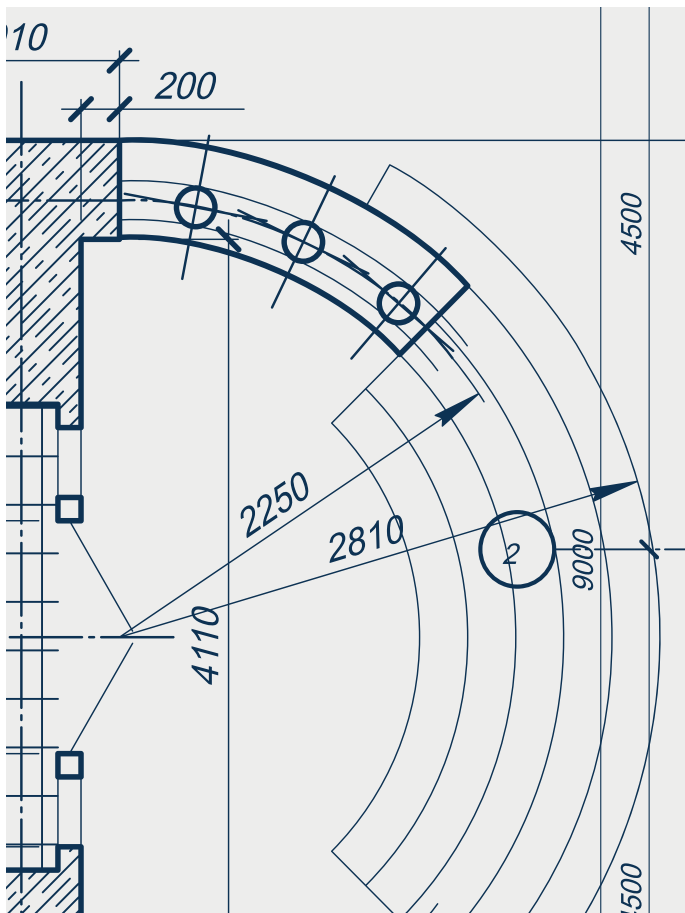
**Rajeshwar Burla**

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# NEW-AGE TECHNOLOGY!

Construction technology start-ups are introducing innovations that can put an end to the issue of time and cost overruns and the constant increase in labour and material costs. **CW** reports how!



TO SHARE



The year 2019 was a breakthrough year in terms of digitisation of the Indian construction industry.

The industry witnessed a push and utilisation of cutting-edge software technology for real estate, industrial as well as infrastructure projects. "Every construction company today is convinced that

technology is the way forward," says **Velprakash K, Executive Director & Sector Head-PDS, JLL India.** "From cloud-based collaboration to robots and artificial intelligence – an incredible array of developments is helping improve the way buildings and infrastructure development happens in India."



Velprakash K

Cloud-based collaboration, adoption of 3D modelling and BIM are making a significant shift towards constructible models, industrial robots. "These tools along with IoT will help construction companies connect, collaborate and be a real time data driven sector," says Velprakash. He is confident that the year 2020 will continue witnessing similar trends.

### Coming in of technology start-ups

It is interesting to see how the industry has transformed from site based and non-desktop jobs to being technology driven.

"At JLL," Velprakash says, "...we believe these start-ups should be given the right support and push required to transform this industry with more advanced technologies. JLL IDEAs is India's biggest real estate proptech accelerator that promotes start-ups working on cutting edge, disruptive

## QUICK BYTES

- What's trending: BIM, cloud and mobile technology, drones, virtual reality, artificial intelligence and robotics.
- Benefit: Optimising and automating the construction process for faster project delivery.
- Start-ups should be given the right support and push required to transform the industry with more advanced technologies.

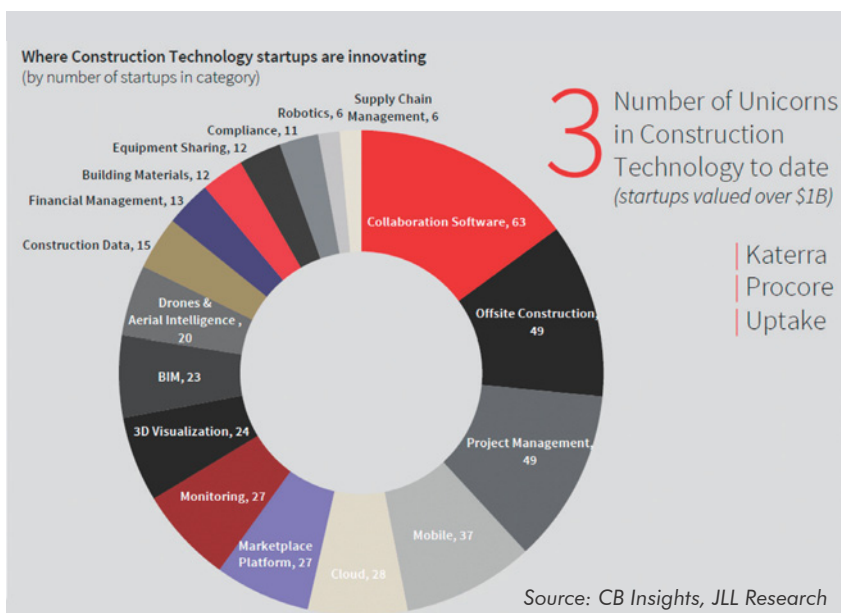
technologies and solutions impacting developers, investors and occupier clients in the country." The programme aims to create India's biggest platform for convergence of technology in real estate sector.

As an earlier JLL report underlines, it would be possible for construction stakeholders to optimise and automate the construction process and make faster project delivery possible. They could ensure that fewer resources will be required for the smooth development and completion of the building process.

Some of the ways in which start-ups are establishing their presence in this field have been indicated in the below graph.

### Upcoming trends

Building Information Modelling (BIM), cloud and mobile technology, drones or Unmanned Aerial Vehicles (UAVs), Virtual Reality (VR), and artificial intelligence and



Collaboration software, offsite construction, big data and AI are some of the major areas of focus for these start-ups and focus of improvement for construction companies.



## COVER STORY

### TO SHARE



## The Tech-Revolution!

Several new technologies have been making inroads in India. **SC Dixit, Executive Director, Shapoorji Pallonji Engineering & Construction**, elaborates:

- With the introduction of Internet of Things (IoT), an engineer can review the project progress real time on his mobile phone.
- Nowadays, we are also able to conduct satellite surveying of the entire contour, and access details of what is happening at the ground level.
- With the use of drones, we are not only able to conduct surveys, but capture activities on-site from a 360° perspective 24/7.
- The industry is now growing further on robotics. We are experimenting through robots on our site by using robotic block work for the walls. This activity does not involve labour – through the robotic process, blocks are lifted and the wall is created. From productivity point of view, this is a significant move.



SC Dixit

- We need to look at creating a drywall system so that it is faster, factory-made and requires minimal labour.
- Further, there is a SAP system, which integrates the entire system from financing to process control to procurement to delivery to store inventory.
- RFIDs are now being tagged on to materials. We can also tag RFID to the labours to monitor them on site. So productivity can be measured.
- 3D printing is going to be the future. At Shapoorji Pallonji, we are at the early stages of adopting this technology.
- Beyond BIM what is being spoken about now is virtual reality (VR). You could walk through the entire project in advance, analyse the product and minimise mistakes.

robotics are some of the technology construction companies will be bound to adopt going forward. Velpurakash K elaborates:

- *Cloud-based collaboration:* Effective communication is a prerequisite for the successful execution of any project, more so for complex real estate projects that involve large number of people in the project ecosystem. With cloud based collaborations, the hope for future is bigger.
- *Shift towards constructible models:* The adoption of 3D modeling and BIM in construction is a key driver of digitalisation. Professionals have realised that paper drawings, even in a BIM model, are not always accurate or reliable enough for actual construction. The only solution is to make these digital models constructible; which is exactly what constructible BIM, the next generation of BIM, delivers.
- *Robots on construction sites:*

Unmanned Aerial Vehicles (UAVs), commonly known as drones, are often used in global construction projects nowadays. Use of drones have rendered surveying of large construction sites at a much easier and quicker pace today when compared to the several days or weeks it used to take in the past. The accuracy and precision of drones will only increase, necessitating even lesser human involvement.

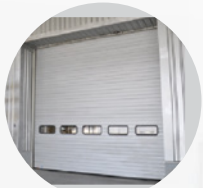
- *Internet of Things (IoT):* Believed to be a key element of smart city infrastructure, sensors connected to the Internet can continually monitor and manage in real-time critical urban resources such as water, sewage, and electric systems. In construction, IoT is commonly used for monitoring machines on the site floor and for tracking the work progress. Mixed reality is making its mark globally, and

sensors mounted on construction equipment or hard hats worn by construction professionals' help firms significantly boost workforce safety on construction sites.

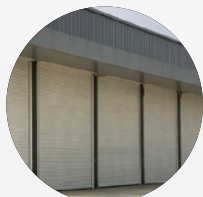
- *Offsite-construction:* Modular construction is gradually becoming a popular choice in the sector given the serious skills shortage and the continuously increasing material costs. It's an alternative approach to the way we design, plan and build in the sector.
- *Big Data and AI:* Strong innovations range from automating the material ordering and delivery process to creating visual tours in future structures and promoting the use of self-driven vehicles on site. As the data collection and tracking practices improve, these type of technologies are expected to develop even further in the near future.



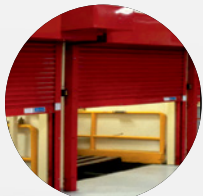
HIGH SPEED DOOR



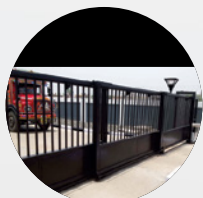
SECTIONAL OVERHEAD DOOR



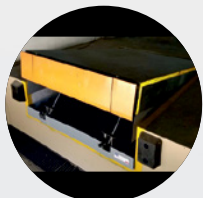
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## COVER STORY

**CW** connected with select technology start-up firms for an overview of the current need and their new-age offering to the building and construction sectors.

### MOBILE-APP BASED CONSTRUCTION MANAGEMENT SOLUTION

The construction and real estate sector in India is a \$150 billion industry and is set to grow seven times by 2028 (almost to \$1 trillion)!

Unfortunately, the industry has been plagued with huge issues such as project delays and cost overruns. On an average, projects are delayed by 18 months, and almost 80 per cent projects exceed budgets. According to a recent study, in the last four years, only 15 per cent of the companies have handed over their projects on time to the end consumers. The key reason: Low productivity, ancient working techniques and slow or no technology adoption.

Existing technologies do not address the issues on the ground. Also, the top management of builders have limited visibility on project delays, resulting in increased costs and low customer satisfaction.

Backed with a unique blend of industry and tech experience, three industry experts – Gautam Mayur, Aditya Shankar and Sashi Kiran – came together to solve the above issues with the use of digital technology and the power of mobile. This led to the development of FalconBrick Technologies. The aim was to digitise construction operations in a way that it helps accelerate projects and allows much earlier handover to customers.

And today, FalconBrick has come up with one of India's first end-to-end, mobile-based construction

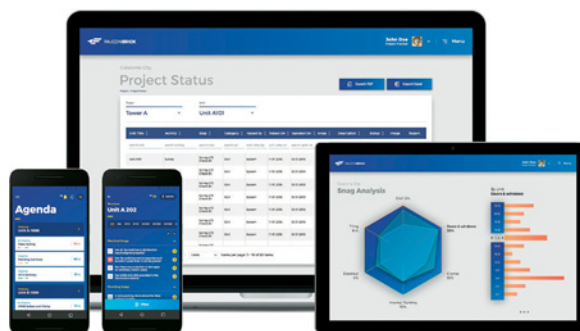
management solutions for real estate builders and construction companies.

"The mobile app helps builders accelerate their projects and reduce delays by up to 20 per cent, saving costs by up to 15 per cent and providing much superior quality to the end consumers by reducing delays, improving efficiency and bringing in transparency and accountability," says Sashi Kiran, Founder & Director, FalconBrick Technologies.



Sashi Kiran

### The FalconBrick Suite



Kiran informs that the solution brings all teams involved in any construction project onto a common platform with two primary components:

- **A workflow solution on an easy-to-use mobile app:** This is used by engineers and even contractors to track the project's progress at a detailed level (flat-wise/activity-wise) and monitor site activities, contractor tasks and inspection checklists from their own mobile phones.
- **A powerful package of real-time data analytics and live dashboards:** This provides real-time information to senior management on the project's progress, predicts delays and helps builders benchmark projects, contractors and employees.

The mobile app is completely customisable and addresses every stage of a project life-cycle, as Kiran mentions, "from the start till handover to the customers." This includes: "Excavation and civil structures, entire finishing of apartments and commercial structures, inspections and handover to end-customers, and post possession and facilities management."

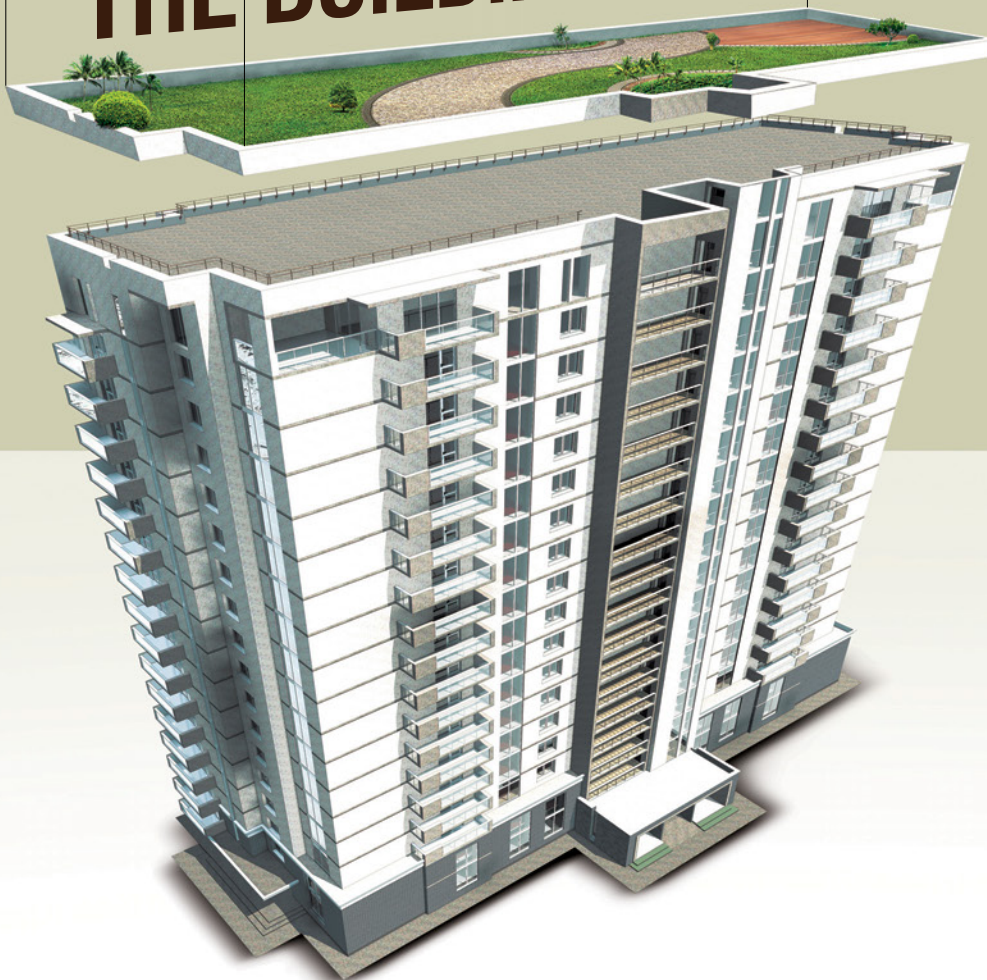
### FalconBrick Technologies

- **Year of establishment:** 2016
- **Growth graph:** Grown to multiple cities, more than 60 leading customers and about 100 projects.
- **Reach:** Bengaluru, Mumbai, Pune, Delhi-NCR, Kolkata, Hyderabad and Chennai
- **Clientele:** Embassy Group, Aparna Builders, JLL, L&T Realty, Brigade Group, K Raheja, Salarpuria Sattva, Dosti Realty, Rohan Builders, M3M Group and PS Group.
- **Aim:** To go live at about 1,000 projects pan-India across the top 10-15 metros as well as Tier-II and Tier-III cities, and also tap international markets.

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## COVER STORY

### INTEGRATED PROJECT CONTROLS SOLUTION

Also, over the years, the construction industry has not leveraged technology to an extent where it could function smoothly, especially when compared with its counterparts such as manufacturing and retail. Accomplishing consistent coordination and communication over the project life-cycle was viewed as a serious challenge. And, only a true disruptive innovation and a technology paragon could fix this.

Nadhi Information Technologies was born out of the understanding that construction projects involve intra and inter-organisation collaboration and coordination among several stakeholders through the design, procure, and the construct phases. As co-founders, Kalyan Vaidyanathan and Ravi Mundoli come from a civil engineering background. They brought together their passion for “brick and mortar” with “click and order” and created nPulse™ – a cutting-edge full-fledged enterprise solution for integrated project planning and controls that is capable of transforming project planning and execution to a whole new level.

Today, Nadhi develops and delivers nPulse™, an integrated project controls solution that allows mobile data collection, integrated project information analysis and real-time decision support for over 250 capital projects in 19 countries. “The nPulse™ platform enables the owner/developer, consultants, and contractors involved in a project to collaborate on the

go,” says Kalyan Vaidyanathan, Co-Founder and CEO, Nadhi Information Technologies. He adds, “The idea is to grant visibility of site conditions without actually visiting the site (especially by senior management) and to reduce and automate most of the manual planning and forecasting tasks performed by planners and project managers.”



Kalyan Vaidyanathan

Ravi Mundoli, Co-founder and CTO, Nadhi Information Technologies, shares, “As it is a mobile-first SaaS based platform, data is collected through mobiles from site engineers and supervisors present at the site and further analysed.” He adds, “Project heads can then use these data driven analytics in critical decision-making, well before an issue mushrooms into a crisis.”



Ravi Mundoli

This product is widely used in residential and commercial real estate, roads, railways, power plant, solar, bridges, marine facilities, and power transmission. It is more than a collaboration hub, and as Vaidyanathan and Mundoli share, its features include:

#### Nadhi Information Technologies

- **Year of establishment:** First production release – about five years back.
- **Growth graph:** Develop a diversified portfolio of around 250 projects.
- **Reach:** Daily use by over 2,000 users in 19 countries around South Asia, the Middle East, Southeast Asia and Africa
- **Application:** Highways, railways, bridges, oil and gas, power, solar, power transmission and distribution, and commercial and residential real estate.
- **Clientele:** RMZ, Lodha Builders, Kalpataru Developers, Tata Realty, Godrej Construction, Morgan Advanced Materials, L&T, Afcons and Shapoorji Pallonji.

- Automating key processes and workflows to reduce the manual burden on project staff and KPIs are delivered to decision-makers real time.
- Data collection at the “last mile” on-sites is easier via mobile apps and QR code.
- Bi-directional integration with ERP and scheduling systems so that more value can be extracted from investment in those technologies, further increasing the digital footprint of the organisation.
- Physical and financial progress can be tracked synchronously and early warnings can be provided on potential deviation from budget and schedule baselines.
- Generating lead indicators on project and reducing the domino effects of time and cost overruns.
- Seamless collaboration across different areas of the project such as schedule management, cost/revenue management, document management, issue management, quality control, snag list management, checklists and claims processes.
- Integrating with BIM enables the site progress data and analytics to “flow” into the BIM model at the click of a button for visualisation in near real time.

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## COVER STORY

### OPTIMISING OPERATIONS WITH DATA-DRIVEN EFFICIENCIES

The future of the construction and real estate industries will rely heavily on being able to use data-driven efficiencies to optimise their operations.

However, digital tools within the industry had been either limited in scope or inflexible. Virtually, no one had tried to empower truly integrated and real time systems. Here, Facilio has a vision: To introduce the same responsive service provision that users have become accustomed to in the B2C space from business models such as those of Uber and AirBnB. Essentially, the idea was to offer the industry a simple to use but powerful digital tool. And, data was the means to achieve this.

From the outset, Facilio's vision was to achieve optimal outcomes for all stakeholders, from commercial real estate owners and facilities managers to building occupants. The industry's assets was constantly generating huge amount of data but it was not being put to use. This is where the company wanted to cater to – be it delightful customer experiences, optimal energy efficiencies, and reduce cost of operations or unprecedented sustainability.

Facilio is one of the only IoT-driven data platforms for multi-site building operations and maintenance that harnesses IoT and AI to centrally consolidate existing building systems and automation data across an entire portfolio, onto the cloud. As **Prabhu Ramachandran, CEO and Co-Founder, Facilio**, says, "It offers applications and modules for property owners and service providers to manage and control portfolio-wide O&M activities and outcomes, such as maintenance, tenant experience and sustainability, in real-time."



**Prabhu Ramachandran**

There is a huge scope for the deployment of technology driven models in the fabrication and maintenance of buildings. "Not only does such a digitally empowered model result in unprecedented efficiencies, it can redefine the cost versus revenue profile of current business models. Be it within the complex web of workforce teams and assets deployed in construction, or the many embedded automated systems in the average modern building, a lot of operational

TO SHARE



### Facilio

- **Year of establishment:** 2017
- **Funding:** The company has raised two rounds of funding so far. Raised its seed funding from Accel Partner, and their Series A funding from Tiger Global and Accel.
- **Growth graph:** Active across the US, India, Middle East, Brazil and Singapore. Expanded into the territories of Dubai and New York in 2019.
- **Clientele:** Wsl Properties and Al Fajer facilities management in the Middle East. MoU with Digital X, a subsidiary of DEWA, to deliver Smart Living as a Service (SLaaS), as part of the ambitious Dubai 10X initiative.

data being generated is currently lying unused," says Ramachandran. He goes on to inform that Facilio's technology agnostic platform is able to extract this dormant resource and create value for the business, by turning such data into actionable insights. "With the complete transparency of operations that the solution makes possible, the industry can finally make truly informed and data-derived decisions."

### DRONE DATA-BASED SOLUTIONS

The complex nature of construction projects result in a lack of near real-time data and this is why delays and overruns happen at the ground level. Different stakeholders focus on varied aspects of a single construction site. While the engineers focus on aggregate and volumes, the management looks into the overall time and cost overruns.

Skylark Drones builds and delivers drone data-based solutions that streamline planning, reduce overheads in contractor management and increase oversight of operations for the construction sector across sites in different verticals and geographies. Mughilan Thiru Ramasamy and Mrinal Pai were college mates and had pursued their engineering in Bengaluru. Aerospace was a shared passion. They realised that the inherent advantages that drones and drone data bring can be leveraged with the right technology to solve prescient real world challenges. They established Skylark Drones for enterprises to plan, build,

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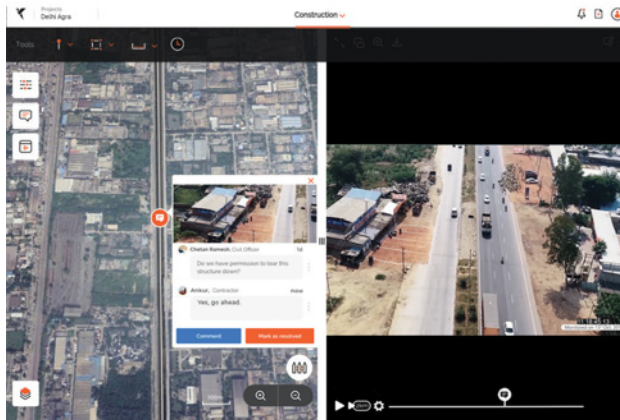
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## COVER STORY



and sustain assets by reducing operational costs, saving time, and increasing revenue.

**Mrinal Pai, Co-Founder, Skylark Drones**, says, "What we do is recreate construction sites near-real time and analyse the geospatial twin with AI driven intelligence for engineering information and management insights across every stage of construction."



Mrinal Pai

At the pre-construction stage, Pai adds, "Drone solutions serve to understand the topography in terms of land usage and ownership to streamline planning. During construction, these provide an accessible way for project managers to understand the quantum and quality of work delivered by vendors and contractors on a day-to-day basis. And, post construction, drones play a major role in the area of defect and anomaly detection." Drone solutions are driven by high-density data points that are about five times as accurate as satellite data.

### Skylark Drones

- **Year of Establishment:** 2014
- **Clientele:** Tata Steel, BOSCH, L&T, UltraTech, Syngenta, CleanMax Energy, Vedanta, Shapoorji Pallonji and Alstom.

Drones and drone data help cut down the time spent in every phase of the data to decision process. The other aspect is reach. Pai shares, "One can understand the area of interest faster and give the engineers a bird's-eye view of what is happening across the entire site." Similarly, a manager can monitor not just one but multiple sites in tandem.

## OFFSITE MANUFACTURING

Over the last decade, the country has witnessed increasing migration, especially among millennials, to urban areas for better career prospects. This has led to increased pressure on the existing infrastructure and real estate development and an urgent need for smarter, better, and sustainable buildings. The Indian construction industry, with its conventional construction methods, has been struggling with delays in project completion due to lack of industrial and technological advancement, procedural, permission constraints, and delayed processes. There is a dire need to transform the industry to meet the massive demand for residential and commercial buildings by introducing technology-driven models for construction, and this has led Kattera to the Indian construction sector.

### Kattera

- **Year of establishment:** Founded in 2015 by Michael Marks
- **Growth graph:** Today, Kattera has more than 700 projects in progress and six factories across the globe.
- **Headquartered:** Silicon Valley
- **Reach:** Operational offices across North America, India, China, and the Middle East
- **Clientele:** In India: Embassy Group, Bosch, and Infosys in Bengaluru; Lulu Mall, KMCH Hospitals, and GEMS Schools to deliver solutions for commercial and industrial buildings, hospitals, malls, and schools; recently broke ground for a new residential and office space project with Vaishnavi Group.

Kattera develops design and technology-driven solutions that help reduce delivery time up to 50 per cent, thereby speeding up the construction process to deliver smarter and better commercial and residential spaces for its clients. With its factories in Krishnagiri, Hyderabad, and Lucknow (portable factory setup) in India, the company has the capacity to manufacture a 1.2 million sq ft building in less than 50 days through end-to-end building services.

At Kattera, technology is used at all levels of building design and construction, bringing tested system

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## COVER STORY



approaches from global industries to ensure greater efficiency in building design and development. "We are using technology-led end-to-end solutions across the building delivery cycle – right from design to procurement and offsite manufacturing to onsite installation and ultimately, delivery of the building," says **Nejeeb Khan, Head, Design & Business Strategy in India, Katterra.** "Our technology-driven component design and productised building solutions are Designed for Manufacturing and Assembly (DfMA), which enables our clients to benefit from speed and cost optimisation while still having a unique building design." The company's automated assembly-line production, along with factory-built components including bathroom, rooms, double walls, beams, hollow-core slabs, among others, are built offsite at a factory set-up with mechanical, electrical, plumbing work, finishes, and fittings. And as Khan informs, "Finished components are then delivered onsite just-in-time using pre-determined software simulated schedules and assembled onsite. This integrated technology approach helps us deliver projects faster, efficiently, and more sustainably."



**Neejeeb Khan**

Katterra's factories act as an extension of job sites, providing greater precision, higher productivity, and enhanced quality control. "The company has also developed a host of curated, high-quality building products in HVAC, lighting, bath pods, building materials, and finishes," informs Khan. "It has been suppliers of a global chain on curated, high-quality building products, and provides full-fledged building products to every sector, including residential – single and multi-family homes; commercial office buildings; hotels; malls; hospitals; schools; and industrial parks."

### INDUSTRIAL 3D PRINTING

In India, there is a need for industrial 3D printing solutions. With all Indian start-ups focusing on consuming 3D printing, this technology is set to bring in the next revolution in the manufacturing process.

Four years ago, four IIT Madras alumni came together to introduce the industrial 3D printing. This led to the formation of Tvasta Manufacturing Solutions, a technology-driven company that builds systems and applications for 3D Printing. "The company aims to enable Production of end products using 3D printing and is working towards making 3D printing a mainstream technology for Industries," says **Adithya VS, CEO, Tvasta Manufacturing Solutions.**



**Adithya VS**

#### Tvasta Manufacturing Solutions

- **Year of establishment:** 2016
- **Growth graph:** Moved from small scale printing to building the largest 3D printer in India. Growth has been quite steep with real improvements in offerings and technology year-on-year.
- **Clientele:** Largest construction companies in India, cement companies, and government organisations.

Tvasta sees itself as a platform and applications company. Adithya adds, "Tvasta leverages the 3D printing technology platforms to target specific applications in various industries, which can deliver high value to its customers." He adds that the company has developed 3D printers capable of building large-scale structures in the area of construction 3D printing. An ongoing project in collaboration with a construction company and IIT Madras aims to 3D print toilet modules using 3D printing. The company is also building India's first 3D printed house along with the habitat for humanity in IIT Madras.



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## COVER STORY

## AAC BLOCKS

The construction industry for the longest time used red clay bricks. The fundamental issue, however, is that it used red soil for mass production, which is the topmost layer of any produce. And, this key ingredient was an old technology and was contributing to soil erosion. And this led Darshan Kumar to establish Maxlite AAC Blocks.

"I established Maxlite to replace the hazardous red clay bricks with AAC blocks. I really wanted to make an impact to our environment," says **Darshan Kumar, Founder and Managing Director, Maxlite AAC Blocks**. He goes on to add that the primary advantage of AAC blocks is that the key ingredient for production is fly-ash. "Fly-ash is an industrial pollutant, hence recycling which would mean impacting the environment double-fold," Kumar adds, further elaborating on other advantages it carries such as



**Darshan Kumar**

## Maxlite

- **Year of establishment:** 2017
- **Headquartered:** Bengaluru
- **Achievement:** Till date, recycled over 60,000 tonne of hazardous fly-ash pollutant to make the AAC blocks that have saved an approximate of 5,000 tonne of CO<sub>2</sub> emissions.
- **Clientele:** Quality of the AAC blocks produced is a testament to the company's 150+ stockists, 75+ premier projects and over 7,500 retail customers in India.



higher strength, lower cost, and energy-efficacy as compared to the standard red clay bricks.

Kumar always wanted to make a difference in the business world. And he was passionate about establishing a business that is eco-friendly. "I feel responsible towards the environment and it is with that in mindset I initiated Maxlite, a source for profitable business and an eco-friendly one."

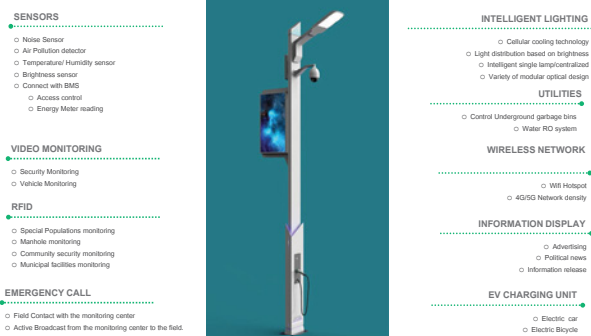
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## ENERGY-EFFICIENCY AND SUSTAINABILITY

Energy-efficiency continues to be the top priority for any organisation in becoming more cost competitive in open market place and meeting the national objectives of enhanced energy-efficiency. Moreover, energy costs have increased at an alarming rate of 25-40 per cent in the last 10 years affecting the bottom-line of any organisation. As per a recent report, saving 30 per cent of your bottom-line in turn is equivalent

## Smart Pole-The Future



to making 5 per cent more revenue. On top of that, the interest in environmental responsibility is at an all-time high. This prompted the formation of an organisation – Ecoprosus India – to integrate sustainability and guide the customers.

An intuitive technology company, Ecoprosus delivers integrated energy-efficiency and sustainability across all sectors. "We work with customers on both sides of the meter to reduce OPEX, upgrade and maintain facilities, stabilise energy costs, increase energy reliability and enhance the

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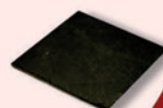
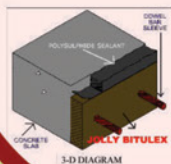
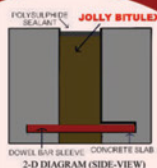
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## COVER STORY

### Ecoprosus India

- **Year of establishment:** 2017
- **Growth graph:** Currently, has a turnover of \$2 million with a pipeline of clientele to reach \$7 million by 2020-2021.
- **Clientele:** One of the key OEM for the BEL, Astrikos and Schneider to implement several smart city projects including Namchi, Gangtok, Belagavi, Tumkur and Goa; other clients include Goldplus, Ispat, Schneider, DS Group and Harman.
- **Pioneered:** Deployed smart lighting and smart poles for several projects

environment," says **BR Anand, Co-Founder & CSO, Ecoprosus India**. He adds, "We deliver sustainable growth to the new and running businesses by providing unique energy-efficiency and integrated enterprise sustainability solutions with minimal or no upfront capital investments." The company provides a comprehensive, customisable, scalable platform that help cities and communities to proactively predict and solve social, economic and environmental problems. It focuses on IoT, artificial intelligence, machine learning and a deep understanding of wireless design and connectivity solutions. "We believe in," Anand says, "→ Continuous innovation → Being responsive, reliable, and collaborative → Diverse thinking → Open and transparent culture."



BR Anand

### INTEGRATED WATER MANAGEMENT PLATFORM

India is no stranger to the issue of water crises. In this scenario, five engineers – Vijay Krishna, Mohamed Mohideen, Abilash Haridass, Sundeep Donthamshetty and Selvakumar AB – established WEGoT with the aim to support the adoption of sustainable water use practices in buildings using technology. Growing up in Chennai and being witness to acute water shortages, these engineers wanted to contribute and help the city solve its water shortage. Having understood the power of Internet of Things (IoT), the group ventured to develop VenAqua, a sensor-based IoT device and a software platform that can be connected to water inlet pipes.

#### TO SHARE



### WEGoT

- **Year of establishment:** 2015
- **Reach:** Spread across 15 cities and aims to expand to 10 cities in the next two quarters.
- **Growth graph:** Solutions deployed in 30,000 homes, 20 mn sq ft of commercial space resulting in a cumulative savings of 1 billion litre of water.
- **Aim:** To hit the target of saving 10 billion litre in the next two years.
- **Business model:** Stopped selling the product and gave it for free (installation charged on actuals) and charged a nominal monthly subscription fee. This helped acquire customers at a 4X pace.
- **Clientele:** Residential space: Brigade Group, Salarpuria Sattva, Mahindra, Aparna Constructions, Appaswamy Real Estates, Casa Grand Group and Ceebros; Commercial space: Godrej, ITC Group, Danfoss, Embassy, RMZ Group and Indian Institute of Human Settlements.

WEGoT has created an integrated water management platform in real time, to address the current water crisis. "By tracking real time flow, the company's sensor-based IoT device and VenAqua, helps in reducing the demand for water by more than 50 per cent," says **Abilash Haridass, Co-Founder and Chief of Growth & Strategy, WEGoT**. Sensors are installed in buildings to track water usage and generate daily reports. These granular data collected from various installations are analysed and the insights are shared with the end-users on a mobile app. Haridass adds, "The software further tracks usage patterns, which helps the building owners understand the amount of water required to be stored in tanks. It also detects leakages, abnormal water usage and inefficient water infrastructure, and informs the users and facility managers in real-time." As part of the process, people managing buildings become more accountable and decrease their consumption by making real-time decisions.

Haridass informs that the solution is offered on subscription, wherein the company gives the product free and users pay nominal monthly fee of ₹149 (Residential) or 20 paise per sq ft (Commercial), apart from installation charges. The solution has helped apartment communities, commercial buildings and factories save up to 50 per cent water consumed.



Abilash Haridass

- SHRIYAL SETHUMADHAVAN | CW |

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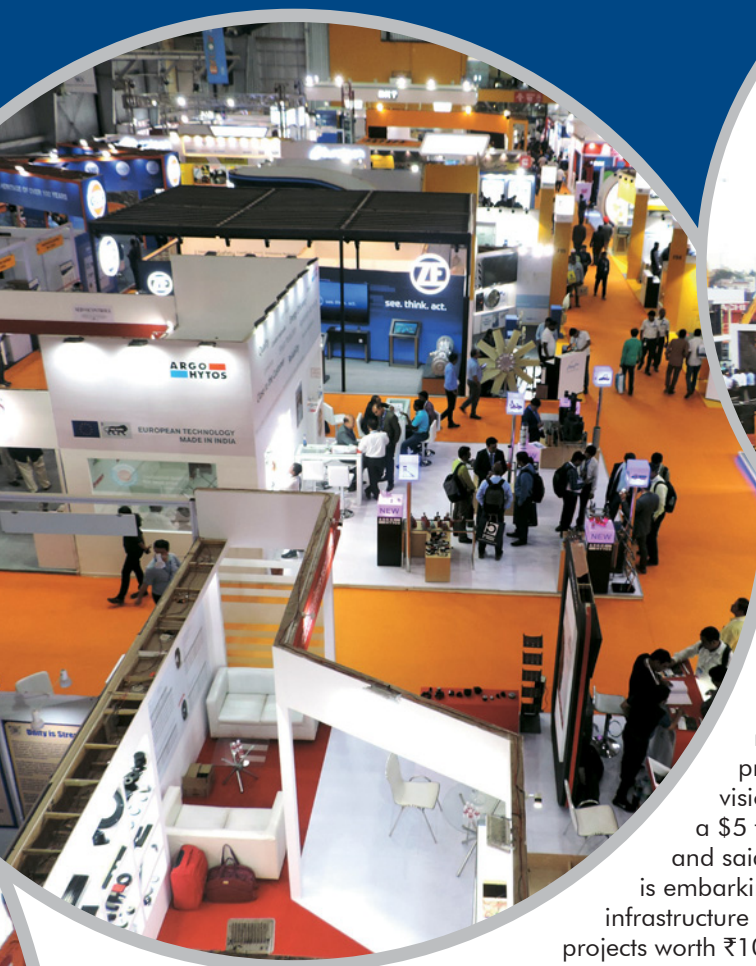
FEATURE-POST-**EXCON**

# EXCON 2019

The expo in Bengaluru, held from December 10-14, spelled big opportunities for the construction equipment sector, offering an expectation of 40 per cent increase in sales for the industry in the near future.







The equipment sector is always on the go with a never-give-up attitude! And the 10<sup>th</sup> edition of Excon in 2019 once again saw a gathering replete with optimism – new launches, key handovers, live demos and companies showcasing the latest technology and upgraded machines. It was a future-ready event, completely in sync with its theme: Next-Gen Infrastructure.

### The opening

Adding to the buoyancy was Nitin Gadkari, Minister for Road Transport & Highways, and Micro, Small and Medium Enterprises, Government of India. Delivering his inaugural address at CII's Excon

2019, he reiterated the prime minister's vision to make India a \$5 trillion economy and said the government is embarking on major infrastructure and industrial projects worth ₹100 trillion to achieve this. "For the roads sector alone, the Centre is investing ₹2 trillion this year," he said. "The amount of investment for next year will increase to ₹3 trillion. Within the next five years, the total government spend on road infrastructure will be about ₹17 trillion. The construction equipment industry can hope to expect a 40 per cent increase in sales in the near future, as the government is pumping huge amounts of investment in road and other infrastructure projects such as the development of waterways, airports, ports and smart cities."

Guest of Honour Karnataka Chief Minister BS Yediyurappa said that the state is an emerging hub for construction equipment and

a component outsourcing and design base. The state presents huge business opportunities for the construction industry, as it is embarking on major infrastructure development projects in roads and flyovers, industrial infrastructure and power.

Delivering his theme address, Vipin Sondhi, Chairman, CII Trade Fairs Council, said the construction equipment industry is witnessing a digital influx with the advent of artificial intelligence (AI), telematics, Internet of Things (IoT), and big data, making construction equipment intelligent and connected. These developments will increase site efficiency and productivity of construction projects in India.

Proposing a vote of thanks, Sandeep Singh, President, ICEMA & Vice Chairman, CII Karnataka, said reducing cost of construction is possible when the usage of equipment is maximised. For this, the government needs to ensure the flow of funds to infrastructure projects.



## FEATURE-POST-EXCON

### Celebrating women in infrastructure

The inaugural ceremony also celebrated women in infrastructure by recognising and awarding companies that have taken proactive steps to enable women to participate in the workforce. Further, a report titled *Women in Infrastructure* was released that features the current status of women participation in the sector and best practices to enable the sector to include more women as it continues to develop.

### Embracing the future

In its 10<sup>th</sup> year of organising the expo, CII organised special activities including exclusive pavilions on AI, IoT, robotics, start-ups, and components and parts, among others.

Part of the expo was a conference on 'AI, IoT & Automation'. The session focused on the paradigm shift from machine training through programming to achieve automated solutions with AI and IoT under the Industry 4.0 wave. The Industry 4.0 revolution has witnessed a convergence of digital computing, telecommunications and increased use of sensors. These technologies have eased and simplified processes in the industry, leading to improved productivity and quality.

### Challenges and opportunities

What's more, an interactive session on 'Construction Equipment Industry: Challenges and Opportunities' was organised. In his presentation on the status of the Indian construction equipment industry, **Dimitrov Krishnan, Vice President, ICEMA, and Vice President-Sales & Marketing, Volvo Construction Equipment**, said, "The industry has seen tremendous investments in infrastructure in the

The CONSTRUCTION WORLD team was present at the expo in Bengaluru, reporting real time. For highlights of the expo along with videos and images where leading exhibitors speak about the market scenario, technologically advanced innovative offerings on display and more, log on to [www.constructionworld.in/Excon-2019](http://www.constructionworld.in/Excon-2019) or scan the following QR Code



last decade with about half billion equipment installed. The industry has employed approximately 1.2 billion people. In the next five years, as India aims for a \$5 trillion economy, expected investment in infrastructure will be ₹100 trillion and equipment requirement will be at least eight times of what it is today; and it is expected to generate nine times of the employment."

Explaining key initiatives to accelerate growth of infrastructure to regain market share, **SK Mishra, Executive Director (Infra), Ministry of Railways**, said, "The government has already taken the decision of allowing 100 per cent FDI in railway infrastructure. There will be a substantial increase in the capital expenditure and Indian Railways will invest over ₹10 trillion in the next five years on various projects."

With regard to major initiatives planned in Karnataka, **RK Suryawanshi, RO-Projects, National Highways Authority of India (NHAI)**, said, "Over 17 projects amounting to ₹180 billion

covering a length of 1,386 km are under implementation by NHAI. Another five projects amounting to ₹61.16 billion covering a length of 280 km are awarded and the work is likely to commence soon during this financial year in the state."

### In addition!

Additionally, a session on 'Over-Dimensional Cargo (ODC) and Infrastructure for Armed Forces' was held where industry experts shared their insights on efficient project cargo movement and emerging requirements and smart technology solutions in defence. The session also addressed procedural developments in project cargo, challenges faced while handling heavy lifts ports and cargo carrier innovations in road, rail and inland waterways. Industry experts also shared their views on managing project cargo complexities in road, rail and inland waterways transport and the next steps towards project cargo logistics excellence in India.

### Summing up

The 10<sup>th</sup> edition of CII Excon 2019 was spread across 300,000 sq m of display area with over 1,250 exhibitors, including more than 390 overseas companies from 21 countries, besides country pavilions from China, Germany, Italy, South Korea, Turkey and the UK. The five-day exhibition attracted over 70,000 business visitors from India and abroad.

Read on for insights on the industry scenario and technology advancements from CW's interviews with select exhibitors at the expo. For CW's detailed coverage on Excon 2019 – video interviews, pictures and event highlights – refer to the box above and scan the QR code.



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## FEATURE-POST-**EXCON**

### APOLLO TYRES

**“We are moving towards highest uptime and the lowest cost of ownership concept.”**



Rajesh Dahiya

Gurgaon-based Apollo Tyres came into inception in 1972, and has since, been among the trusted names in the business of manufacture and sales of tyres.

**Rajesh Dahiya, Vice President-Marketing, Sales & Service, and Farid Ahmed, Head Marketing-OHT of Apollo Tyres, share more on the company's new launches.**

**Expectations from 2020:** 2019 was a tough year. Overall, the economy has been under stress. The OEMs were one of the segments under maximum stress. And, for Apollo Tyres as well, it has fairly been a challenging year. Yet, we performed better than our expectations and the market, and have added 1.5-2 per cent market share. However, we see the scenario stabilising now, and we are bullish about it. We have a strong plan for our products, distribution and the brand that we have been able to build.

**The big opportunity:** One major opportunity for us is in the replacement segment. This is where we are trying to expand our distributions, especially in the rural areas. Additionally, we are growing in areas that have not been our strength so far. We are trying to expand our distribution in the rural areas and focus on some existing areas where we can increase our market share. Furthermore, we are also looking at increasing our export in a big way.

**Designed for efficiency:** The core of our philosophy is highest uptime and lowest Total Cost of Ownership (TCO). We have been developing

concepts to deliver this to various customer segments. For us, product is the fundamental lever to touch every Apollo product user with this philosophy. Our new Terra range of tyres is an attempt towards this, where we deliver an upgraded performance in certain product segments and better TCO in other product segments.

For more specialised customer segments such as mining and ports, we have developed service modules, which can illustrate tyre utilisation, and Apollo has recommended preventive maintenance procedures in real time to its users. This is a major value addition when a business owner buys an Apollo product and will know exactly how much he has been spending on tyres and how Apollo's recommendations help to decreasing cost and increasing uptime.

**Launch at Excon:** At Excon 2019, we launched the Terra range for backhoe loaders. These are second generation products that are designed to deliver upgraded performance through better mileage and bi-direction traction in some sizes, and better overall value or cost of ownership in other sizes. We also launched new front tyres for a hydra crane called 'Terra Crane' under this philosophy. These tyres are a new grounds-up design for cranes with stiffer sidewalls for precision and optimised specs for better cost of ownership. We also launched the forklift range of tyres. The Solid tyre range, called Solift R300, follows the uptime concept through its three-stage construction enabling 18 hours a day work without disintegration. The pneumatic range is called "Nulift".

**Focus on R&D:** Apollo has a dedicated R&D team for every category of product. Our R&D spend is the highest in the Indian tyre industry.

### CASE CONSTRUCTION EQUIPMENT

**“Our plan has always been to localise our manufacturing in India.”**

CASE Construction Equipment is built on the principle that simple is better. Sharing more on the company's operations and recent launches is **Neil Woodfin, Vice President, CE AMEA and CE Global Alliance, CASE International SA.**

**Industry 2020:** There has been a slowdown in 2019. We did expect the industry to recover post elections. But it did not meet our expectations.

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## FEATURE-POST-EXCON



However, it is great to hear that the infrastructure investment would continue to drive growth in 2020. And, the government is making certain positive moves wherein they are supporting the leasing partners by providing guarantees to them to ensure that the money flows in and to enable the purchases by the various contractors. Infrastructure will continue to be a major segment that will grow, and that bodes well for us. We are a strong player in road construction – we have got the compactor, the grader and the dozers, and have launched the 20 tonne excavator, which can also be used in various applications.

**Enhancing productivity:** With telematics, we aim at providing the customer the information that they require. For us, it is important to link in to that machine to identify and understand if there is a problem and we can then plan our response more effectively, be it a repair or maintenance response. And, through that planning, you can be more efficient. With this information flow, we will be able to eliminate time and up productivity for the customer.

**Skilling operators:** One of the constraints to growth is the shortage of skill labour. And, we have been training people to ensure that they are up to speed with the latest technology. This enables them to get the best out of their products.

**New launches at Excon:** In 2016, we launched the grader, and the following year, we launched the dozer. Our plan has always been to localise our manufacturing in India. And I am delighted that we have launched that product at Excon 2019. In India, we represent around 60 per cent of the excavator market. The 20 tonne excavator is the biggest segment within the excavator range. The application in which it can be typically used is road construction, quarries and general construction. Also, the engine in this machine makes it high on fuel-

TO SHARE



efficiency as compared to any other product in the market. Creating a benchmark, we have got the highest developed productivity too. This drives return on investment and capital for the customer.

**Financial solutions:** As a company, we try and provide a complete solution to the customer. Along with providing the best products, this also includes providing financial solutions. We recently made a major investment to set up a captive finance operation here in India. This will enable us to offer our customers the best financial solutions.

### CATERPILLAR INDIA

**“We need to ensure that all the equipment talk to each other.”**



Caterpillar has been a key partner in India's growth since the 1930s, supporting growth in mining, transportation, captive power generation and construction of infrastructure. **Vivek Vanmeeganathan, Director, Material Handling & Underground (MH&U) Division, Caterpillar India**, shares more...

**Market opportunities:** Infrastructure will still be the primary segment, within which, roads will be the biggest driver. There have been projects, but the progress has been slow compared to the recent past. But the last two months has been a good indication of where the industry is heading.

**Enhancing productivity:** The success of a project or its efficiency is largely determined by how all the equipment are getting well-coordinated and connected. The assets are first connected, and then

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## FEATURE-POST-**EXCON**

through an app, you can actually track the machines' activities at any given point in time. The contractor gets real time visibility, which helps in efficient utilisation of the asset. Also, coordination is important, and hence, we need to ensure that all the equipment talk to each other.

In terms of the overall operating cost, fuel plays a vital role – it can drive more efficiency ensuring minimal time consumption, and that is what our technology typically does. It helps in condition monitoring and predictive maintenance, ensuring that availability of equipment is not an issue. Condition monitoring and site efficiency are two key aspects that can drive productivity and efficiency.

**Skilling operators:** We have two big channel partners – Gmmco and GCPL – and this is one of our biggest competitive advantages. They have extensive training programmes for the operators. It is the skill of the operator that determines the machine's efficiency and utilisation.

**Product launches:** All our machines displayed at Excon 2019 are connected assets. Caterpillar has traditionally enjoyed being the market leader in the motor grade segment. And, at Excon 2019, we launched the next gen motor grader. This is an upgraded machine with better technology, productivity and efficiency.

### LIUGONG INDIA

**“We are a strong player for wheel loaders and motor graders.”**



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Liugong is the first China-based construction equipment manufacturing company in India with more than a decade experience and more than 500 local people. **Zeng Guang'an, Chairman, Guangxu Liugong Group,** shares more...

**Market for 2020:** We see huge opportunity for the company in the Indian market. Owing to the stable government, in 2020, there is huge potential for infrastructure development, real estate and mining. And, Liugong has several offerings for the mining segment in the form of large heavy-duty products in excavators and wheel loaders. And, we are planning to launch mining trucks for the Indian customers.

**Key challenges:** The major challenge for us is that the India market is growing at a faster pace and so are the customer requirements. We need to prepare various product lines to meet these fast changing requirements. Challenges also include the need for more talent and the supply chain. In 2019, we have improved our supply chain to support our excavators and some other product lines. We are a strong player for wheel loaders and motor graders. In the coming years, we hope to be stronger players in the backhoe loaders and excavators segments as well.

**Enhancing productivity:** The young generation of customers is looking for new technologies. Hence in 2019 and 2020, we are launching new generation excavators and wheel loaders. Some of the equipment will be manufactured in India, while some in China. These machines are supported with features such as GPS and monitoring systems. The machines can be monitored on the mobile phones. Also our machines launched in China are supported with features such as augmented reality (AR) with remote control operations. We also have autonomous and semi-autonomous machines in wheel loaders that can provide 10-20 per cent increased productivity and can save on manpower requirement and fuel consumption. We are going to introduce these technologies to the Indian market in future.

**Products at Excon:** We have a wide range of machines displayed at Excon. We have launched the 7 tonne wheel loader, which is a heavy-duty high efficiency and better productivity product for the aggregates market, quarry and coal handling. We also have a whole range of excavators from 8 tonne to 50 tonne for the Indian market requirements. We have also displayed cranes, dozers and forklifts to provide more support and solutions to the Indian market.

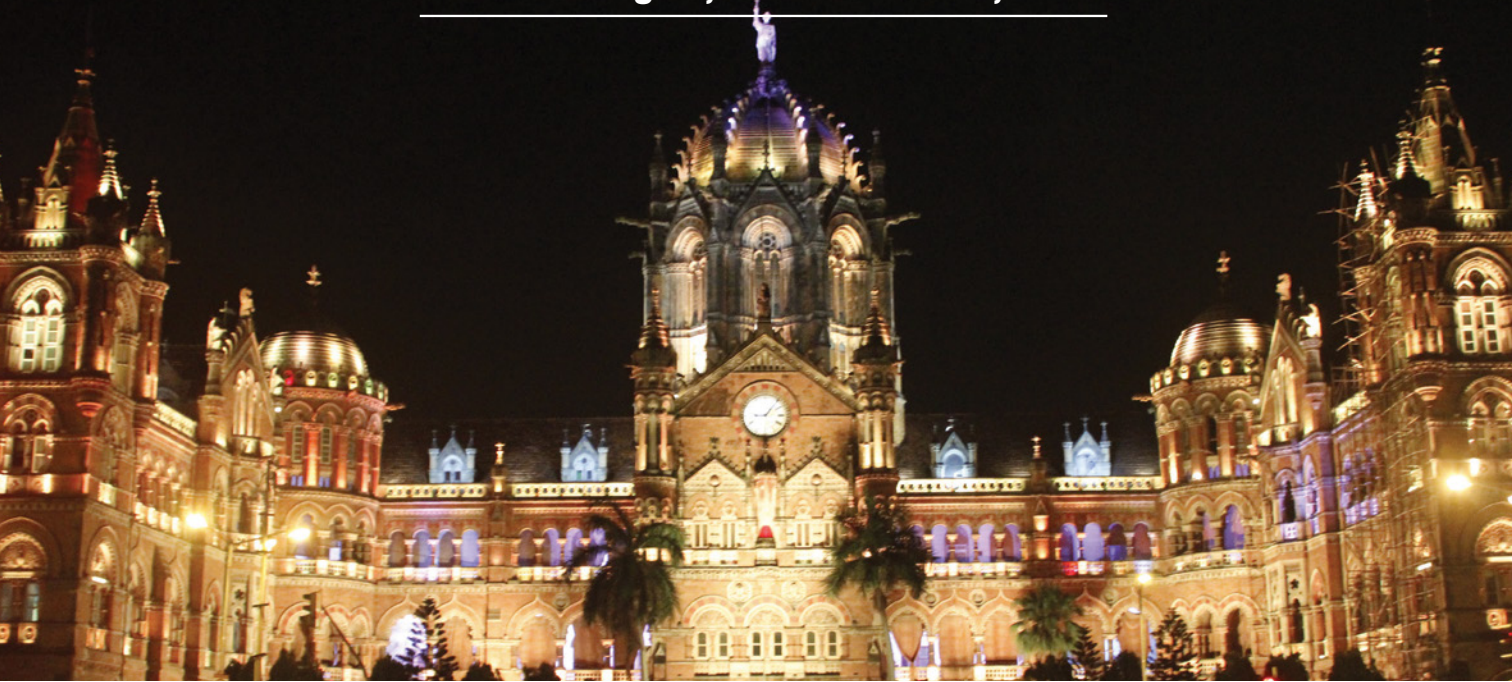
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## UNIFLEX

### “So the strategy is to be near the customer and grow.”

Established in 1987, UNIFLEX today has five manufacturing plants – three belonging to the Hose Products Division and two to the Tube Products Division. The Hose Products Division is dedicated to flexible hose assemblies, end fittings, adapters and CNC machined components while the Tube Products Division manufactures rigid tube assembly fabrications, fuel injection pipes, and small and medium fabrications. **Venkatesh S Aiyer, Director, UNIFLEX**, shares more...



**Excon advantage:** In terms of participation, this was the sixth edition of Excon for us. An important part of our strategy here is to meet our existing clientele. Speaking of our new launches, we have introduced tube assemblies. We are promoting this along with our hose assemblies.

**Key challenges:** Last year has been quite difficult. There has been a slowdown in not just the construction equipment sector but other segments as well. One of the challenges has been that when the customers are not doing well, you also run into a viscous cycle – for example, cash flow; you have huge inventory that you are not able to liquidate. But now the scenario is improving. Fortunately, we export as well as have business coming in from the Defence, both of which are doing relatively well.

**Opportunities in 2020:** Over the next few years, there are going to be big changes in emission requirements that will bring in new technologies for engine. For example, common rail fuel injection will replace the existing mechanical fuel pump. This will bring new opportunities for us for our high pressure common rail fuel injection pipes.

**Immediate future plans:** We would like to grow. We have recently started a new plant in Pantnagar, Uttarakhand. With this, we will definitely be looking forward to growth. Our long-term plan

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is to start at least another two new plants, which are near the customer. So the strategy is to be near the customer and grow along with them.

## VOLVO TRUCKS

### “Volvo Trucks is shifting gears and focussing on driving customer success.”



(L-R) Dinakar B and Jonas Nilsson

Over the last 20 years, through our high-technology innovative products and services solutions, Volvo Trucks has been driving progress in the Indian market.

**Dinakar B, SVP-Sales, Marketing & Aftermarket** and **Jonas Nilsson, VP-Market Hub India, Volvo Trucks**, share more...

**Opportunities in 2020:** We are expecting a market revival in 2020. If the infrastructure projects that are being spoken about take off, this will be an opportunity for high productivity equipment such as ours to serve our customers. Our offerings cater to the niche markets such as heavy irrigation and heavy road construction. And, these segments have been least affected by the 2019 downturn.

**Enhancing productivity:** ‘Dynafleet’ is our telematics solution where the truck driving pattern is continuously monitored by the Dynafleet system, which helps in improving the driver competency and the truck operating conditions. This results in improved truck utilisation, minimal idling hours and better fuel efficiency.

**Uptime:** At Volvo, we have put a little more behind delivering 'superior uptime' for our customers – a one-of-its-kind concept. The Volvo Uptime Center is a 'digital home for a more profitable transport operation'. Today, Volvo Trucks uses connectivity to prevent unplanned stops and predict service intervals.

**Driving customer success:** Every day, customers across businesses choose to purchase vehicles and service solutions from us to help them succeed in their business. They trust us to keep our promises and always be there for them. In our case, this means the things that create value for the customer, where availability, quality and cost effectiveness are decisive. We don't work for customer satisfaction, rather we focus on customer success.

**New launches:** Excon 2019 was focussed towards the business operation and not individual products. The product area focussed on three key segments – road construction, mining and coal transportation and general construction.

- The Volvo FM380-23 cu m is a construction truck that expresses toughness and robustness in a distinctively Volvo way. It has a character that looks right in a road construction, irrigation and quarry.
- The Volvo FMX460-20.3 cu m is the BS-6 solution for mining. The Volvo FMX can handle some of the toughest conditions out there. Where many would struggle, the FMX is always ready to be pushed to the limit.
- The Volvo FMX460-33 cu m is a high capacity coal transportation solution. The reliable and powerful FMX platform helps you get higher productivity with a lower fleet size, ensures high uptime, long service life and much higher returns on your investment.
- The Volvo Tree-Transplanter – Care for the environment has been one of Volvo's core values since the 70s. Among various initiatives taken, we have also identified the need of the hour to save the trees. There are two machines that are currently operating at KIAL as a part of the expansion project.

The aftermarket area focussed on an end-to-end solution provider for the customers. We partner with our customers on improving their operational efficiency and competence development. To us, there is no time for downtime.

We will continue the work we do every day, of 'Powering Customer Success'. We will always put our customers first, delivering products and services that enable them to keep the promises they have made to their customers.

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## BONFIGLIOLI INDIA

# "We have a long-term expansion plan for India."



Bonfiglioli Transmissions has recently expanded its manufacturing facility in Chennai to double the production in India. **Kennady V Kaippally, Country Manager, Bonfiglioli India**, shares more...

**Key focus areas:** We have three business units. The industrial segment serves process industries and mobility; the wind business focuses on off-highway equipment and wind turbines; while mechatronics focuses on electronics integrated products. In the off-highway sector, we are a major player in each of its various segments. Most of the road construction equipment run on our drives now, and we want to continue this success. We are the market leaders in the concrete equipment segment with significant presence in batching plants, concrete mixers, transit mixers and self-loading mixers. The biggest segment by far continues to be the hydraulic excavators. Naturally, this is one application segment that is close to our heart and which is our strength as well. This will be a key focus area for us as we are expanding our penetration in this market.

**Technologies for productivity:** We have the smart product range that we started a few years ago with integrating sensors, used for collecting data and delivering services to our customers. Some of these products like the swing drive are equipped with sensor units that deliver data, which is collated to provide assistance in predictive

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## FEATURE-POST-**EXCON**

maintenance or monitoring applications. Similarly, we have solutions to monitor lubrication conditions and provide scheduled interval for maintenance, specifically in harsh environments. These technologies become more valuable when we serve the market like large mining excavators, where downtime is critical, and so, there is a greater need for predictability. We are now doing projects for material handling and warehousing equipment, using similar concepts in electric drives for monitoring these applications.

**Expansion plans:** We have expanded our production facility in Chennai, enabling us to double the capacity to meet the growing market demand. We think the current economic slowdown is temporary in nature and the inherent demand for infrastructure remains high in India. This inherent demand has to translate in higher equipment sales and our expansion plans will help us to cater to this expanding demand. We are also focusing on the export market. Last year, our exports were around 20 per cent and this year it has gone up to 35 per cent. Next year, we expect our export to be 40 per cent of our business. So, we continue to leverage competitive manufacturing footprint to gain market share as well.

**Excon as a platform:** Excon is becoming an important event as the construction equipment market has grown significantly in the recent past. We started our business in India of producing drives for the industrial segment, and after that, grew strongly in the wind business. In the past few years, we have been moving more into the mobile equipment where we are global leaders in several applications. So, Excon becomes an important platform for us to showcase our product offerings. This year, the expo has been far better than expected. We thought that the sentiments and the reactions will be muted, owing to the slowing of demand, but it is heartening to see that people are optimistic.

### ATLAS COPCO POWER TECHNIQUE

**“Our plan is to innovate, and we are continuously working on better products.”**

Atlas Copco Power Technique provides air, power and flow solutions through products such as mobile compressors, pumps, light towers and generators,



(L-R) Tony Van Herbruggen and Pratap Padode, Editor-in-Chief, CW

along with a number of complementary products.

**Tony Van Herbruggen, General Manager, Atlas Copco Power Technique**, shares more...

**Innovations for customers:** We are offering even more efficient products for the customers by ensuring less fuel consumption, better pressure and capacities to increase efficiency. At Excon 2019, we have introduced many products for the construction, mining and infrastructure sector. We are introducing a lighting tower for those who continue to work over time in the later hours of the day. Considering the market for construction and mining, we have showcased our large air compressor the XRH1100 PLUS, which is popular for drilling.

**Current market:** Despite the challenges faced by the industry in 2019, our wide range of products proved beneficial for us. So owing to market conditions: If demand for one product decreases, the demand for another product increases. And, in 2019, one business area that was booming and benefitted us was the water well drilling. Going forward, we hope that construction and mining will pick up. We are trying to cover all market leads with the best products, and as and when there is an opportunity, we look forward to winning the business.

**Opportunity in 2020:** We will keep introducing new products. Customers are looking for applications that may not yet be popular in India but is creating a new niche market. We also continuously work with distributors and customers to understand their requirements. What

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## FEATURE-POST-EXCON

we see is that when we develop new products, we eventually emerge leaders in the segment.

**The smart approach:** For the machines that we deliver, we have a Fleetlink, which is mainly for the aftermarket and for the customers, through which, the performance of the machine can be monitored. Whenever there is a requirement of two or three different machines with different capacities, we have introduced one single machine that can cater to two to three different applications. This is a new technology that we have brought in. Now, the customer will have to invest in just one machine for different applications.

**Future plans:** Our plan is to innovate, and we are continuously working on better products. Be it good or bad times, Atlas Copco will always be there for its customers. And, India is a big market. We want to develop our territory coverage here, for which, it is important to ensure availability of parts in different regions. So, it is important for us to continue innovating for the benefit for the customers and to interact closely with the customers.

### LEEBOY INDIA CONSTRUCTION EQUIPMENT

**“We create value for our customers through make in India.”**



LeeBoy India benefits from having a local manufacturing facility to effectively catering to the local and export markets. **K Sunil Kumar, President, LeeBoy India Construction Equipment**, shares more...

**Opportunities in 2020:** The inspiring speech of Roads and Highways Minister Nitin Gadkari during the inauguration of Excon has boosted the confidence of the construction equipment industry. While we see a lot of opportunity on the anvil, faster implementation of projects would give an impetus to the industry. Substantial investments are expected, especially in the road sector in the coming year, and this should pull up the demand for the construction equipment industry.

**Market challenges:** Challenges in infrastructure projects seeking clearances need to be looked into. However, the moment the projects get cleared, you will see the demand going up. The second major problem is financing. Although there is demand, the financial closure of projects can be slightly restructured in terms of flexibility and easy finance for the customers. Government support in terms of faster release of funds would also help in faster implementation of infrastructure projects, which will create demand for the construction equipment industry.

**Enhancing productivity:** We make sure that our machine uptime is always the highest, which will ensure productivity. We have our dealers spread across the country with the required stock of spares and service engineers to assist our customers. There are also inbuilt technical features that ensure enhanced productivity. We have launched a new motor grader with 10 ft Mould Board primarily for small roads, and PMGSY road projects.

**Skill development initiatives:** We have trained operators located at all the regions to train the customer's operators in terms of better operations of the machine. When we sell a machine, we send our operator with the machine for a week or two along with the customer's operator so that the knowledge can be transferred in terms of the better operations to enhance productivity.

**Future plans:** Through domestic manufacturing, we are creating great value for our customers in India because they are getting a world-class product in terms better features and critical components like engine, axles and transmission from reputed international suppliers. Also, since it is manufactured in India, we are in a position to offer better value for money. We also feel that because of having an Indian manufacturing base, there is an opportunity to look overseas

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## FEATURE-POST-EXCON

because the acceptance for Indian products is increasing globally. We are looking at the South-east Asian countries, the Middle East and Africa for more exports. Going forward, we are trying to augment our product range to give better choice and value for our customers.

**BKT**

### “Radialisation is the future.”



BKT is the one of world's leading tyre manufacturers that is fully dedicated to Off-Highway Tyre manufacturing. **Ashok P Chhajer, General Manager-OE Sales, BKT**, shares more on the company's products and solutions.

**At Excon:** BKT has been participating in Excon for the past 18 years and is the first tyre company to participate at the expo. We are participating at exhibitions like Excon with an objective to showcase our strength to the OEMs of India and overseas, actual users, government bodies, and all other stakeholders of the industry. We have succeeded in each and every edition of the expo so far and hope to continue with the same in the coming years.

**Market challenges:** In the concept of radialisation, we are finding it difficult to convince the customers to switchover from bias to radial. Our entire focus is on radialisation as it is

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the future. Globally, radialisation is at an advanced stage, while in India the trend is yet to pick up.

**Ahead of the competition:** BKT is fully dedicated to off-highway tyres with a wide range of SKUs, which are more than 2,700 varying from 5" rim diameter to 57" rim diameter, viz, Bias, Radial, All Steel Radial and Solid Tires meant for vehicles such as dumpers, graders, trailers and forklifts to the technologically advanced machines like high horsepower tractors, combines, harvesters, GPS controlled vehicles, articulated dump trucks, high-speed cranes and port vehicle. Apart from what has been mentioned, we also provide customised solutions, which keeps us ahead in the competition.

**SREI EQUIPMENT FINANCE**

### “Co-lending and leasing becomes the key tool this year.”



Srei Equipment Finance offers innovative financing solutions to equipment purchasers, even those new to the Indian equipment financing market. **Devendra Kumar Vyas, Managing Director, Srei Equipment Finance**, shares more...



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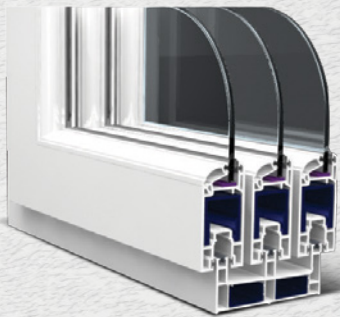
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## FEATURE-POST-**EXCON**

**Industry 2020:** After the industry experiencing a growth of 25 per cent CAGR YoY for last few years, 2019 is a year of correction. This was required for the industry because when you grow at such a high pace, your base constantly increases, and then to maintain and sustain that kind of growth at such a high base becomes a challenge. So, with 2019 becoming a year of a lower base, the number achieved in 2020 will certainly be more than 2019. This will create positivity in the ecosystem. So, 2020 could be a turnaround year for our industry. While volumes did decrease by 20-30 per cent in 2019, it is more important to sustain the growth over a longer time horizon. And, 2020 will bring sustainability to the industry.

**Challenges:** Seeking bank guarantee is a key challenge for customers. Although the roads sector has been the key growth driver, this sector too, faced a bit of a slowdown in the last six months. However, during the inauguration ceremony at Excon, Nitin Gadkari, Minister of Road Transport and Highways, was confident of a 40 per cent growth. The minister has said that next year, ₹2 trillion of work orders will be awarded. In the road sector, the equipment requirement are approximately 22 per cent of the total project value. So work orders worth ₹2 trillion, means ₹440 billion worth equipment will be required. Considering that 50 per cent of this could be new capacity, a new market is being created for the balance ₹220 billion of equipment. These numbers give you a feeling that the industry is going to grow. But for this growth, the customer has to get the work order. For that, he has to furnish the bank guarantee, seeking which is a key challenge.

**New schemes:** We have recently introduced the co-lending scheme for our customers. Ours is the first NBFC to have started co-lending, which is as per the RBI guidelines, where an NBFC can partner a bank to provide funding to its customers. Hence this year at Excon, we effectively have five bank presence within our stall. Through this partnership, we provide joint lending to our customers and the customer gets the best of both banking solution as well as customised solutions of NBFC. Also, I personally feel that 2020 will be the year of leasing. It's time that India focuses on creating economic wealth by asset creation through leasing. We are planning on going aggressive on lease financing. So, co-lending and leasing become the key tool this year to provide better solutions to our customers.

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### SUNBEAM INFRA EQUIPMENTS

**“We have focused on introducing new models towards customer centricity.”**

Sunbeam Infra Equipments, a division of Sunbeam Generators, is among the prominent players in the concrete equipment industry with its concrete mixers (purchased from Greaves Cotton) and now with additions of batching plants, concrete pumps and mixer pumps. **Ashwath Krishna, CEO, Sunbeam Infra Equipments**, shares more...



**Market scenario:** The Central Government has allocated a lot of projects. But in terms of execution, the fund flow and cash flow is the real challenge. Banks are more cautious and tentative in funding. We see the market improving and expect a stable market growth scenario from the mid of the next financial year. The Indian economy is complex and a big system, so any plans or initiatives take time to hit the ground. The government is also under pressure and will make efforts to get the economy back on track.

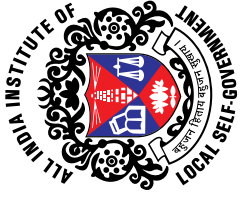
**Customer focus:** Our focus has been more towards the retail and RMC segments. It has just been three years and it is a long way forward for us. In the corporate segment, the expectations are different. But we are conscious that in the coming period, we will work closely with the market and get a good pie of the market share.

**Product offerings:** At Excon 2019, we have exhibited our new models and focused on upgrading our products on the principle that we strongly believe in ‘hearing customer’s voice’. Our 8 cu m transit mixer, 41 m boom pump (in cooperation with KCP-Korea), diesel driven mixer pump and an improved version of our SS50 Hi-Pressure Trailer Pump. All these have been done keeping in mind the expectations of our Indian customer.

**Enhancing efficiency:** Our transit mixers are IoT enabled with ‘T-Track’.

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## FEATURE-POST- **EXCON**

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It is not only about tracking the mixer, but monitoring key operational parameters to ensure product hygiene in a more comprehensive basis. Even our batching plant is supported with differentiating features right from the structure design (Modularised), which ensures faster erection. Also, with respect to the design of the mixer, it provides improved mixing efficiency and quality of concrete. We have focussed on automation in providing a better experience to the operator and customer. Our SS 50 Trailer Pump is feature rich with high-pressure pumping, longer operations, functional back-up and maintenance-friendly.

TIL

### “We proactively pursue when it comes to adopting digital technologies.”



As a major player in the heavy-duty mobile cranes market in India, TIL has consolidated its presence over the years. **Anil Bhatia, Vice President-Sales & Marketing, TIL**, shares more...

**Market opportunities:** Our equipment mainly go into metro projects, railways, refineries, power plants, cement plants and mining. Also in the road sector, wherever there are bridges and there is a need for lifting girders, cranes are being used. Unlike any other sectors where a high percentage of equipment are financed by NBFCs, in our case, about 90-95 per cent of funding is done through banks, as they have the advantages of strong balance sheets and best interest rates.

**Major challenges:** The challenge we are looking at

currently is that of how fast the share of new equipment can grow in the market. We expect that all the rules and regulations regarding the import of used equipment should be implemented in total. In this background, we expect that by 2022-23, the market share of new equipment should be 80 per cent. This will pose a huge market for all the crane manufacturers. Also, the government's plan to spend ₹100 trillion in the infrastructure projects in the next five years will trigger further opportunity for companies in the infra equipment space. With increased demand, we have to gear up for the supply to come in.

**Enhancing productivity:** Our equipment are big in size and capacity, and we have moved on to the platform of Internet of Things (IoT), using telemetry in our ReachStackers and newly launched RT880. Safety is paramount in our industry and the industry has moved into digitalisation. Modern electronic safe load indicators with digital technology have been inducted since early 90's. TIL has also adopted automation wherever necessary in a proactive manner such as computerised operations, sensors and other digital aids for safe operation of the machine. However, at the end of the day, the capability of the operator goes a long way in keeping the man and machine safe.

**Operator training initiatives:** Every crane we sell is a high-value equipment. Whenever we sell an equipment, we conduct a three-day programme where we do the commissioning and train the operator. In fact, many customers send their operators to our factory before the equipment is delivered so that the operator is trained at the time of testing itself. Even after the equipment has been supplied, most customers ask for an operator training refresher course at sites.

**Product display at Excon:** We have two new products on display. One is RT 880 – an 80-tonne rough terrain crane with a long boom of 43.8 m with 17.1 m jib on top of it, crossing 60 m height. The telematics system in this crane is the latest generation Cloud connected machine monitoring solution, which captures comprehensive machine data including location details, usage and service information. Being stored in Cloud database, the data is accessible from anywhere in the world and enables remote diagnostics and updates. Another one is a new range of 360° slew pick-and-carry crane, Mobiload 415. It is a hybrid model of RT and pick-and-carry crane, making it a true pick-and-carry crane with 100 per cent safety.

- SHRIYAL SETHUMADHAVAN

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Ministry of Shipping\*



**Mr. Sanjay Bhatia,**  
Chairman,  
Indian Ports Association (IPA)



**Mr. Pratap Padode,**  
Founder & President,  
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**Dr. A. Janardhana Rao,**  
Managing Director,  
Indian Ports Association (IPA)



**Mr. Dhruv Kotak,**  
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Portall



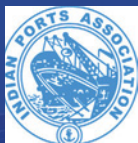
**Mr. Sudhir Kanvinde,**  
Executive Director (IT),  
Indian Ports Association (IPA)



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# Port of the Future

Development of ports provides an impetus to economic activities regionally, nationally as well as globally, shares SUDHIR KANVINDE.

Gerhardt Muller defines a port as: "A harbour or haven where ships may anchor, or a harbour area with marine terminal facilities for transferring cargo or passengers between ships and land transportation." In this definition, the word 'marine' may imply that the port is a territorial unit established on a coastline.

Historically, ports have played a significant and critical role in the building of several major economies around the world. They have been the basis of the colonial power, established by the European countries, including both military as well as commercial activities. Port facilities have been traditionally considered as infrastructural facilities assisting various productive activities. Infrastructure is the lifeline of a nation, and its significance cannot be emphasised enough. Development of ports provides an impetus to economic activities regionally, nationally as well as globally.

## The current scenario

In the current times, a port has moved much beyond this definition, and has now transformed into a logistics platform. Globalisation of complex industrial production processes has increased the importance of seaports in the global supply chain. Port activity is no longer limited to just cargo handling; logistics service provision has become a core part of the business. In this situation, the most imperative aspects of logistics performance are logistics costs and reliability of



supply chains. Poor logistics facilitation takes a large toll on a country's competitive advantage.

India has 12 major ports and approximately 187 non-major ports administered by Central and state governments, respectively. Since about more than 90 per cent of India's trade by volume is conducted via the country's maritime route, there is a continuous need to develop the country's ports and trade related infrastructure to accelerate growth in other sectors. This includes port operational efficiency improvement, capacity expansion of existing ports and new port development.

## Enhancing connectivity

The evacuation time to and from the ports depends on the

connectivity of the ports with the hinterlands. Enhanced connectivity and the overall effectiveness of the logistics systems will ensure smooth flow of traffic. This is an ongoing process to meet the requirements of projected increase in traffic.

Maritime logistics is an important component of the Indian economy. India is still to fully and consistently leverage benefits of port-led development of the Indian coastline. The Sagarmala scheme aims to promote port based or port-proximate industrial and manufacturing clusters. Establishing industrial capabilities near the coast will lower the logistics cost and improve export competitiveness. Sectors such as power, steel and cement have been identified for the domestic markets.

## Port-led development

For promoting port-led industrialisation, 14 Coastal Economic Zones (CEZs) covering all the Maritime States and Union Territories have been proposed. The CEZ perspective plans have been prepared and Detailed Master Plans will be prepared for four pilot CEZs in the first phase of development (Gujarat, Maharashtra, Tamil Nadu and Andhra Pradesh).

The Sagarmala programme has a vision to reduce logistics cost and time for the movement of EXIM and domestic cargo and development of port-proximate future industrial capacities near the coast is a step in this direction. In this regard, 29 potential port-linked industrial

clusters across three sectors – Energy, Materials and Discrete Manufacturing, have been identified under Sagarmala. These include 13 bulk clusters for basic input industries such as power, refineries and petrochemicals, steel and cement, two maritime clusters and 14 discrete manufacturing clusters, in the labour intensive sectors of electronics, apparel, leather products, furniture and food-processing.

## The way forward

Digitalisation of the logistics sector is the way forward. Technology and digital integration are the key drivers that will eventually bring about the

desired changes. Enabling the various stakeholder and related entities, in the logistics ecosystem, to interact with each other through an integrated, and secured platform will lead to greater transparency and reduced cost. It is believed that IoT can greatly contribute to the industry to perform better.



**About the author:**  
Sudhir Kanvinde, Executive Director, Indian Ports Association, has over 25 years of experience in the IT space.

He is currently involved in the process of digitisation of various ports in India, through technology roadmap orchestration, and manages the IT needs across policies, people and processes.

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# END-TO-END SOLUTIONS TO ACE YOUR GAME

From design to construction, marketing to product development, software is helping developers and construction companies push the envelope.

India plans to invest nearly \$1 trillion in the next few years and several initiatives validate the serious intent of the government to build infrastructure at a scorching pace. High-speed rail, mass housing, six new major ports, power plants, steel plants, airports, metro-rail and mega highways spell a significant opportunity for technology majors. Such huge infra spends could potentially translate into an enhanced IT spend of nearly \$200-250 million over the next few years, according to **Harsh Pareek, Regional Sales Director (India & SAARC), Trimble Solutions.**

Based on current usage trends, Pareek expects that artificial intelligence (AI), machine learning, mixed reality and virtual reality will be adopted alongside 3D, 4D and 5D constructible BIM (building information modelling) processes.

"Technology adoption in the construction space is still at a nascent stage," he explains. "With a focus on timely project completion and efficient cost management for profitability goals, the construction industry will need to work towards ensuring the adoption of digital technologies like software and hardware for construction with alacrity."

"Investing in the right tools will help India build world-class infrastructure that is resilient and sustainable," opines **Sunil MK, Country Manager, Autodesk India & SAARC.**

## Design solutions: 2D vs. 3D

Computer-aided design (CAD) and BIM solutions are popular



## QUICK BYTES

- Popular design technologies: CAD and BIM solutions.
- Visualisation with the aid of 3D software is vital for efficient construction.
- Demand drivers for technology: High-speed rail, mass housing, power plants, steel plants, airports, metro-rail and mega highways.

design technologies. CAD software is seen to be easier to use but limited in its visualisation functionality. The Marathon Group deploys AutoCAD to make working drawings in the execution phase, according to **Mayur R Shah, Managing Director, Marathon Group**. "We prefer AutoCAD over Revit (BIM software) for being user-friendly; it is far easier to make changes in AutoCAD than on Revit, so in that sense, CAD serves better in terms of both time and efficiency."

However, visualisation with the aid of 3D software is vital for efficient construction. At Kalpataru, BIM, primarily through Revit and Navisworks software, is used extensively in the design stages of nearly all the firm's projects, shares **Anil Khurana, Head of Architecture & Design, Kalpataru**. "Representing the 3D construction process on a 3D platform, instead of on a 2D CAD platform, ensures accurate 'as is' visualisation of the

proposed built environment. At Kalpataru, this has eliminated the need for project teams to solve complex engineering issues as they emerge on site. Further, complete visualisation and information leave limited room for personalised interpretation by site teams, improving accurate coordination and cost control." For example, when the piping systems of a building at a transfer floor level are to be rerouted, each pipe is modelled and checked against the elements of the structure and the mechanical ventilation system so that clashes are detected and resolved. BIM also enables outcomes of decisions to be predicted (in terms of quantities and costs) and analysed; hence, better decisions are taken, adds Khurana.

In Guwahati, the Airports Authority of India (AAI) took the call for Revit to be used by architectural firm Design Forum International (DFI) and global infrastructure giant AECOM for the design of the New Integrated Terminal Building of the Lokpriya Gopinath Bordoloi International Airport. "Autodesk Revit helped enhance the project teams of DFI and AECOM to collaborate over design, fabrication, construction, operations and maintenance. As Revit harnesses cloud technology, team members at multiple sites



**"Spine and Wing' concept for the Hyderabad Metro Rail station structural design was implemented with MIDAS."**

**- Dr GVR Raju, Senior Vice President, AECOM**



**"Digital technologies played a critical role in constructing Statue of Unity in a record 33 months."**

**- S Anantha Sayana, Chief Digital Officer, L&T**



**"Areas and volumes are easy to calculate using SketchUp."**

**- Mayur R Shah, Managing Director, Marathon Group**

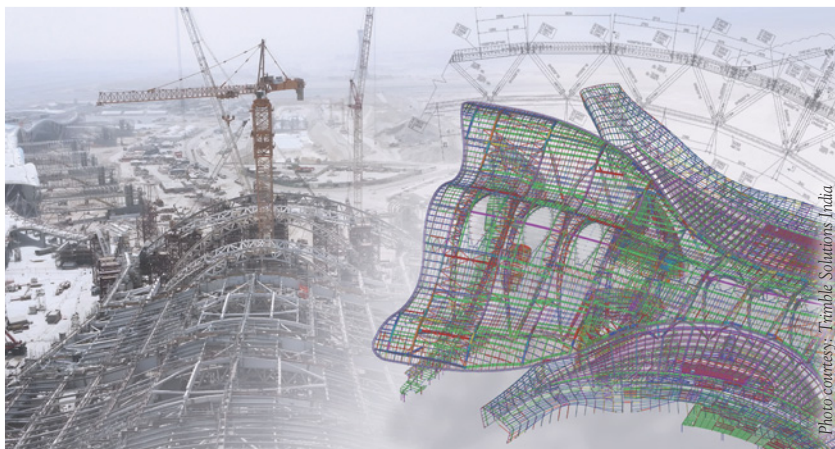
could co-author Revit models," explains Sunil.

Recently, Autodesk announced the expansion of Autodesk BIM 360, its fastest-growing cloud solution, a unified platform connecting project teams and data in real time from design through construction. "Now, Autodesk BIM 360 also includes Autodesk Civil 3D, to offer one of the most comprehensive anytime, anywhere, collaboration-facilitating solutions for complex projects with horizontal and vertical structures," says Sunil.

To give project teams an intuitive, 3D view of the project from the start, and to create 3D diagrams for complex jobs like custom formwork or custom furniture, the Marathon Group uses SketchUp in the design phase. "Discussions and iterations happen within SketchUp," says Shah. "Areas and volumes are easy to calculate using SketchUp; this helps in the procurement of materials."



## FEATURE-CONSTRUCTION SOFTWARE



Based on current usage trends, AI, machine learning, mixed reality and virtual reality will be adopted alongside 3D, 4D and 5D constructible BIM processes.



**"Tekla helped complete a project three to four weeks ahead of schedule."**

**- Jignesh V Chokshi, Senior Deputy General Manager, Engineering, L&T-S&L**

In terms of the sheer numbers of users, Trimble counts SketchUp, its popular conceptual 3D design software, as a hugely successful solution and this tool is used extensively by construction and architectural firms as well as in interior design, according to **Paul Wallett, Regional Director, Trimble Solutions-India and Middle East.**

The Marathon Group also uses Max and V-Ray to design the façade and interiors. "Detailed renders help finalise the volume, form and façade of the building, which is helpful for marketing," explains Shah. "High-quality renders help finalise the interior design and facilitate ordering. Photoreal renders of the furniture serve as a reference for carpenters and fabricators."

### Engineering software

A good design must be structurally evaluated and, here, **Dr GVR Raju, Senior Vice President, AECOM**, points out the value of MIDAS engineering software.

In India, AECOM has used MIDAS for the Hyderabad Metro-rail project, a nearly 66-km stretch consisting of three corridors, 60 stations and two depots.



**"Infra spends could translate into an enhanced IT spend of nearly \$200-250 million over the years."**

**over the years."**

**- Harsh Pareek, Regional Sales Director (India & SAARC), Trimble Solutions**



**"Considering numbers of users, Trimble counts SketchUp as a hugely successful solution."**

**- Paul Wallett, Regional Director, Trimble Solutions-India and Middle East**

AECOM is providing engineering, design review, systems integration, monitoring services, testing and commissioning for the project, and has been incorporating innovative technologies at various stages of the project, including several firsts in

## Manage Multiple Sites

New features in Astral Technologies' Construction ERP are aimed at streamlining site-level activities, vital for companies managing multiple sites. For instance, "GPS-based attendance tracking helps construction companies track the headcount on multiple sites on a real-time basis," says **Deepen Goratela, Founder, Astral Technologies.** "Incorporating this feature in a mobile app makes it handy for those on site. They check in on arrival and check out at the end of their shift."

Managing multiple sites was a key challenge for ACE Project Management Consultant. The company needed a solution to draw up estimates, plan the use of resources, analyse budgets, schedule work and generate daily progress reports to track the live status of projects.

Astral's solution made all this possible and compared the planned and actual progress of projects. Currently, ACE Project Management Consultant is managing 15 sites across India. With Astral's solution, it stays connected to each site and to its customers in terms of approvals.

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## FEATURE-CONSTRUCTION SOFTWARE

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### Digital Technologies that Powered the Statue of Unity Construction in Record Speed

S Anantha Sayana, Chief Digital Officer, L&T, believes the suite of digital technologies deployed for the Statue of Unity (SoU), the world's tallest at 182 m, played a critical role in constructing it in a record 33 months. A look at what was deployed:

- **Surveying technologies:** Geospatial technologies (GPS/DGNSS/GNSS, drone-based photogrammetry, remote-sensing satellites and Terrestrial LiDAR (light detection and ranging)) performed more accurate, faster and economic surveys of the riverbed to ascertain the quantity of landfill required that had a critical bearing on the foundation of the statue, which would have been extremely difficult with conventional surveying methods. These facilitated wind tunnel and hydrodynamic model effect studies, the estimation of catchment areas and assess runoff flow directions to build a sustainable stormwater drainage system.
- **Visualisation solutions:** 4D BIM was extensively used to remove all geometric interferences of elements before going on site. Virtual reality helped analyse and resolve clashes within various sectors, prepare accurate, error-free drawings for speedy execution, and train workmen to give them a real-life feel of the work environment.
- **Tracking solutions:** Radio-frequency identification (RFID)-tagging the 6,850 bronze panels cladding the outer structure helped track their movement from the casting yard to the manufacturing yard for assembly and at the project site. RFID also helped sequence the erection of these panels for the exact, speedy placement of each panel.
- **Mobile monitoring apps:** A project monitoring app connected all the stakeholders. Everyone had access to daily project reports on visually attractive and informative dashboards. A safety app ensured zero incidents despite men working at dangerous heights and having to confront wind blasts along the river. Another app tracked quality while a dashboard collated critical data feeds from several digitally hooked up plant and machinery assets for constant monitoring to increase productivity and help predict trends.

India such as communication-based train control technology in signalling, Internet protocol (IP) based technology, facilitating the easy expansion of bandwidth, and IP-based telephone and terrestrial trunked radio technology systems.

"MIDAS helped implement the 'spine and wing' concept for the station's structural design, which, in turn, reduced the footprint on the ground by 50 per cent and expedited construction," explains Dr Raju.

#### Constructible BIM

The popular design solution BIM has its uses in facilitating construction on site. For instance, Tekla Structures, Trimble's flagship popular BIM solution, allows construction firms to use the benefits of constructability. Constructability implies ensuring in advance that a building or structure can be built efficiently, with information-rich, as-built models, before starting the actual work, using or wasting real



**"Using the CCS subcontract manager module for accurate costing and holistic control over complex projects is a step up from relying on spreadsheets."**

- Alex Mathew, Director, Sales & Marketing, CCS India



**"GPS-based attendance tracking helps construction companies track the headcount on multiple sites on a real time basis."**

- Deepen Goratela, Founder, Astral Technologies

materials. As-built models minimise costly surprises and RFIs (requests for information) and open the way for more profitable projects. Tekla Structures has been deployed in India by steel fabricators, precast companies, contractors and engineering companies, according to Wallett.

Pareek elucidated the role of Tekla Structures in an L&T-S&L project involving the detailed design and preparation of foundation general arrangement drawings as well as the bar bending schedule (BBS) of the steam turbine generator foundation of a combined cycle power plant. In this complex project, Tekla resolved the complexities attached with the foundation geometry, the size of concrete elements and the amount of reinforcement to be placed. It

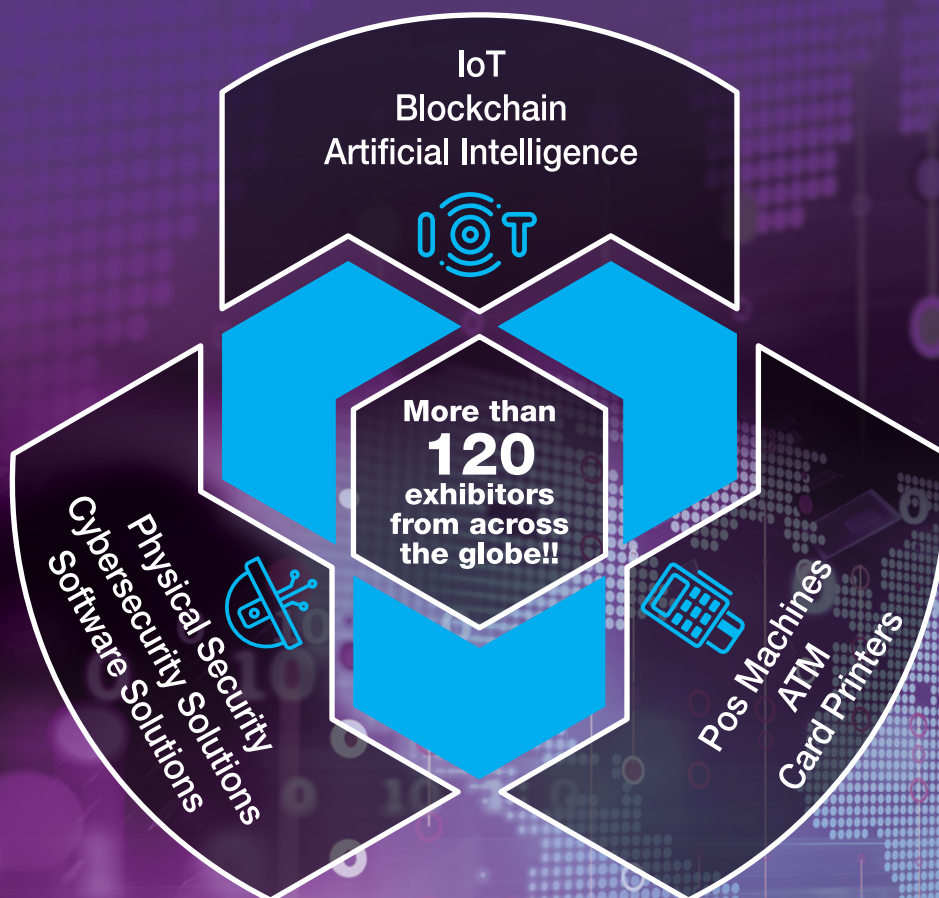
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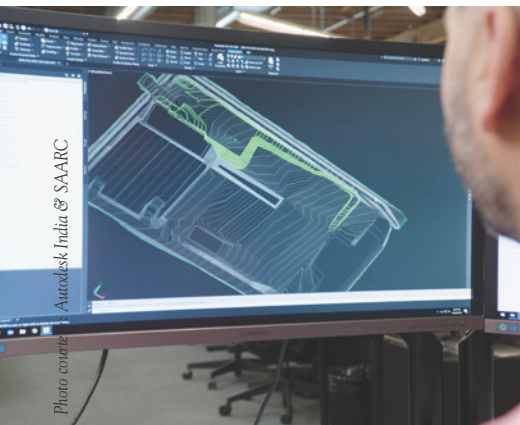
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## FEATURE-CONSTRUCTION SOFTWARE



Investing in the right tools will help India build world-class infrastructure that is resilient and sustainable.

automated the generation of the BBS layout drawing as well as table with bar type, length and its shape. Tekla additionally generated the rebar detailing section at required locations. The visual interface improved the placement of multiple bars of complex shapes.

**Jignesh V Chokshi, Senior Deputy General Manager, Engineering, L&T-S&L**, estimates that the company achieved nearly 35 per cent reduction in this effort over the manual preparation of foundation general arrangement drawings and preparation of bar

schedules. Tekla also helped complete the project three to four weeks ahead of schedule. L&T-S&L gave full credit to the constructible BIM for the project's success, according to Pareek.

### Budgeting and monitoring

When 3D models are ready, solutions such as Construction Computer Software's (CCS) Candy can help estimate the quantity take-offs (BOQ) from those and prepare budgets. CCS's BuildSmart also helps track costs across the engineering and construction process in real time, thus facilitating accurate decision-making covering labour, plant and equipment, materials and subcontractors. "Being designed by contractors ensures that Candy and BuildSmart have modules suited to specialised areas such as subcontract management," says **Alex Mathew, Director, Sales & Marketing, CCS India**.

In fact, latest development releases from CCS integrate the subcontractors' Candy operational information, BOQ, to the BuildSmart subcontractor procurement works order, certificate and payment process, allowing



**"Autodesk BIM 360 also includes Autodesk Civil 3D."**

- **Sunil MK**, Country Manager, Autodesk India & SAARC

### "Inventory dashboards in Qlik help control inventory ageing and excess stock transfers."

- **Anil Khurana**, Head of Architecture & Design, Kalpataru

the full sharing of information between operations and finance. "Sands Infra, which is currently building the largest IT Park in South India, is using the CCS subcontract manager module for accurate costing and to gain holistic control over complex projects, a step up from relying on spreadsheets, which is challenging and not always completely accurate," says Mathew.

The Marathon Group combines ERP and waste control on site to control costs. "Only the right quantities of the best-quality materials are ordered and sent to sites, where individual project managers optimise usage," says Shah.

"Kalpataru uses SAP for procurement budgeting and controls," shares Khurana. "Inventory dashboards in Qlik help control inventory ageing, amount and excess stock transfers. A quality management application helps monitor site activities, while dashboards enable checks on key performance indicators."

Checks are vital indeed!

- **CHARU BAHRI**

## Track Sales and Run a Targeted Campaign

Developers are effectively using software for marketing and to track sales. "Salesforce helps us analyse what kind of inventory (configuration) is working well, and in which particular micro market," shares **Mayur R Shah, Managing Director, Marathon Group**. "This helps us plan offers and campaigns and improve on the plan of future products. Customer information and feedback analysis allow us to tailor precise communication to the right audience."

Kalpataru uses a customised inventory management module in Salesforce.com (SFDC), to track inventory, quotation and booking status by project and tower, in real time. "The module was designed internally to suit processes, policies and RERA guidelines," shares **Anil Khurana, Head of Architecture & Design, Kalpataru**.

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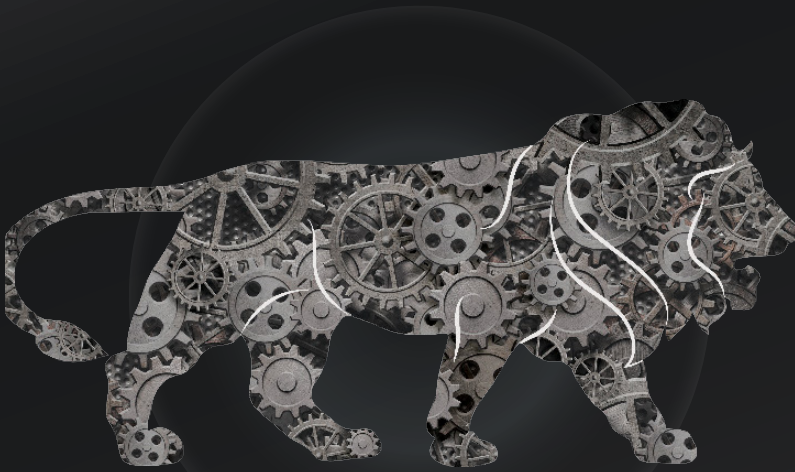
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# “We are taking BIM to a higher level, and we call it Constructible BIM.”

- **Paul Walleit**, Regional Director, Trimble Solutions-Middle East and India

Ample availability of labour, coupled with limited access to software did not quite enable India to grab the opportunities that came along with Industry 3.0. However, with Industry 4.0 being here, where machines will be equipped with the ability to communicate, India is well poised to leverage it for significant gains, says **Paul Walleit**, Regional Director, Trimble Solutions-Middle East and India. In this interview, he shares more on this revolution and how Trimble is aligned with it, in a conversation with SHRIYAL SETHUMADHAVAN.



Today, we have machines that can scan materials, understand how the materials can be positioned on the beam and column, how to pick up the relevant piece of material and attach it in the right place to get perfect accuracy. Therefore, at the far end of 3.0, we see that the industrialised way of working has given way to a more automated and intelligent way of working. Industry 4.0 is an interesting era, and we are at the cusp of exciting times in the industry. We are looking at the adoption of AI and the use of IoT, we have lots of information collected on cloud that is of immense use, but utilising that data in the right way will be the key to how we drive our processes efficiently.

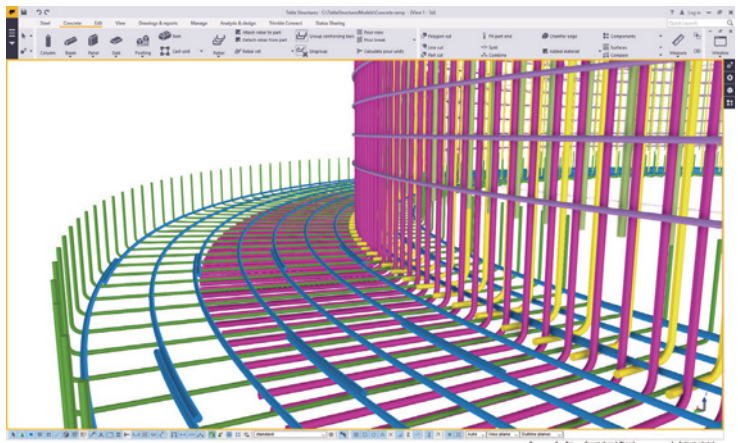
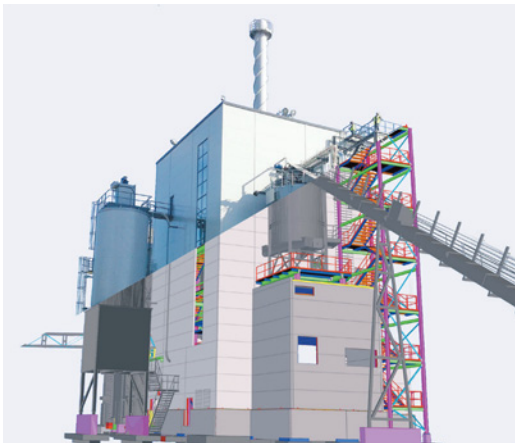
## How is Industry 4.0 an opportunity for stakeholders of the construction industry in India?

For most part of my working life, I was in the 3.0 era when data and technology such as computers had just started to make their mark in the construction industry. As we know, we lived without computers for a number of years and then with

the advent of Industry 3.0, computers got introduced into the drawing office. This was the early stage when people were shifting from the 2D environment into 3D automation and tools, and it was around the mid-80s when we started seeing the appearance of technology and evolution of the traditional processes to ones that had an application background.

## How is Trimble aligned with Industry 4.0?

In the case of BIM solutions, we are actually building structures utilising vast amount of information, and if we compare this to the 2D

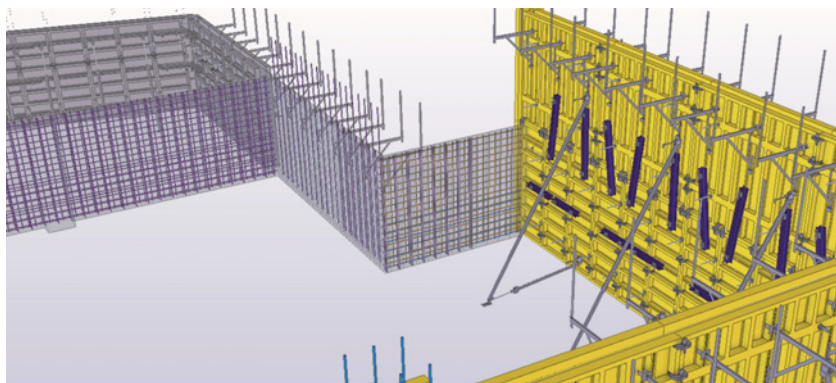


At the far end of Industry 3.0, the industrialised way of working has given way to a more automated and intelligent way of working.

process, which is just lines, text and drawings and some dimensions, we are clearly moving to BIM components that have material data attached to all the information: Material type, the certification, design characteristics with visibility of whom it came from, and where it is going. Each integral piece of data built within the virtual 3D model has a lot of information that can be used in many different stages upto that particular material's life-cycle, whether it is the material of a building or the assets within the building. Trimble has many different technology tools for design, analysis and concept modelling. For example, we have Tekla for the structures, we have MEP solutions as well as SketchUp, a widely used 3D design tool, all of which are immensely beneficial for the construction industry. We are utilising a vast array of different technologies towards problem-solving in construction, and aim to help the industry improve its productivity and thus, profitability.

#### How is BIM along with Industry 4.0 (production domain), able to close the digital gap that still exists?

Inherently, BIM is not a software, it's a process. We have customers in India for the past 15-20 years who have been using our BIM solutions to provide services to the US and European markets, Far East countries, besides a few other countries globally. We have seen a marked increase in technology adoption in domestic projects, which tells us that the industry is moving towards a path to productivity and excellence of a higher order. During Industry 3.0, firms were focused heavily on the architecture-engineering part of the puzzle, and construction was traditionally tied to using drawings on the jobsite. This is where we are



Industry 4.0 is an interesting era, that will witness the adoption of AI and the use of IoT, with a lot of useful information collected on cloud.

bringing about a change, and we are taking BIM to a level that we term as constructible.

#### Is India geared up to catapult into the next revolution: Industry 4.0?

We are seeing instances of how change is occurring and the changes forcing the industry towards more productive processes. For example, certain businesses that distribute parcels are now completely automated wherein robots scan the parcel and take it to the desired point. Historically, such a business would have had a lot of people shuffling parcels around and reading labels. Similarly, baggage handling systems at airports are fully automated in most cases. These are segments where the idea of labour-intensive approach has already been eliminated. When you have robots taking over repetitive processes, labour is freed up to take on even more critical tasks. Recently, there's been an interesting partnership between Trimble, Hilti and Boston Dynamics to explore the integration of Trimble's and Hilti's construction management software solutions, GNSS technology and reality capture devices with Boston Dynamics' Spot Robot platform. The goal of this partnership is to utilise robots for routine tasks in

hazardous environments to improve safety, efficiency, and data capture consistency as a part of our digital transformation vision.

#### What are your expectations from the India market in 2020?

In terms of growth, when we look at the global construction markets, we do see a few political and economic challenges in the near term. Macro issues are affecting regions around the world. Brexit, trade wars, lower consumer spends are a few factors that might have an impact on how the global construction market grows in the next few quarters. However, we have reasons to believe that India will outperform the global growth. Estimates show that from 2019 to 2023, the global construction market's growth will be about 2.7 per cent, but the Indian market is projected to grow around 6.4 per cent. We believe that India should witness a sustained growth of over 6 per cent for the next few years. We have great confidence in the local Indian market for construction, especially with the amount of work going on in infrastructure that will fuel significant growth for the next several years, as well as key government initiatives such as Housing for All.

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# Clean, Smart, Quick

Touted to be one of the fastest and greenest metro projects in India, Nagpur Metro recently witnessed the completion of the 11 km-long Reach 3 of the East-West corridor of Phase-1.



Nagpur is the 13<sup>th</sup> largest city by population in India. And according to an Oxford Economics report, it is projected to be the fifth fastest growing city in the world from 2019-2035, with an average growth of 8.41 per cent.

Evidently, the city needed a rapid and green transit network to help transform it into a smart city. This has been answered with Phase-1 of the Nagpur Metro project. Afcons Infrastructure recently completed the construction of Reach 3 of the East-West corridor of Phase-1 of the project in a record 28 months; the project will soon be inaugurated. The 11-km viaduct will soon provide better and safe transportation for the people of Nagpur.

## Benefits to the city

A clean, smart and quick mode of transport is the need of the hour

for the smart city of Nagpur. The metro-rail project aims at reducing traffic congestion; improving air quality and reducing pollution; significantly reducing travel time; and lowering the carbon footprint by shifting private vehicle users to energy-saving and efficient public transport. The metro-rail service between Sitabuldi and Lokmanaya Nagar stations provides connectivity to the educational hub in the city and MIDC Hingna, the industrial area.

## Key highlights

Civil structure specifications in the construction of Reach 3 included: Foundation – pile, pile cap, open foundation and pedestal; substructure – pier, cantilever pier cap, standard pier cap, portal; and superstructure – segment casting, segment launching, I-girder casting, I-girder erection deck slab casting.

Other highlights:

- Nagpur Metro Phase-1 is a 41.7-km project, and Afcons's scope of work includes 17.087 km in two stretches: Reach 2 (North-South corridor) and Reach 3 (East-West corridor), and, Sitabuldi Metro station (50 per cent of the entire phase).
- 370 spans launched in just 20 months with a record peak progress of 30 spans in one month.
- 3,456 segments cast in 20 months, a rare feat in the Indian metro-rail segment.
- Sitabuldi Interchange Station made operational for the North-South and East-West corridors in just 20 months.

## Execution records

Meticulous planning and efficient execution were the key factors that



**Vaikunth J Pai, Project Manager,**  
Nagpur Metro Reach-3,  
Afcons Infrastructure

ensured that the Nagpur Metro Reach 3 was executed in a record 28 months. As Vaikunth J Pai, Project Manager, Nagpur Metro Reach-3, Afcons Infrastructure, shares, "The team submitted the design and received the requisite approvals from the client on time. Afcons deployed three launching girders and six sets of ground support staging for segment launching. A considerable amount of time was saved when the number of portals in the project was reduced to 20 from 57." Further, another methodology used was segment casting – using the long-line method with 10 beds of segment casting.

### Design and construction techniques

The Reach 3 corridor was planned in an efficient and sustainable manner. As Pai elaborates:

- Segment launching over Govari Flyover using GSS and launching girders: At the Reach 3 project, the Afcons team had to launch a segment on span over the busy Govari flyover at Jhansi Rani Square. However, the segment could not be hoisted in the conventional method as the existing structure was causing an obstruction. Therefore, a tower with single-piece sliders was erected near P293 at the end

of the flyover. The segment was then placed on the tower using cranes and was lifted from there using an indigenously designed and fabricated launching girder.

- Maximum height of pier: 25 m
- Maximum curve radius: 125 m
- Maximum gradient: 2.461
- Maximum span length of viaduct: 36 m.

- Afcons installed GSS sliders over cribs and launched the segment using the launching girder at the crossing of the nallah between the span in the Crazy Castle area.
- A cantilever staging arrangement was used for the construction of pier arms at Ambazari Station. The station was constructed over the slope of a dam, where support was taken from the pedestal itself.
- A GSS staging system was used for the construction of the pier arm to save time, as crib staging involves welding and cutting.
- A combination of GSS and launching girder was used for launching at P169-170, which was obstructed by overhead and underground water tanks.
- Construction of portal for future expansion: The Nagpur Metro project has been planned

keeping in mind the possibility of expansion in future. The construction of a portal was proposed for this purpose. However, a challenge was that land was not available for the construction of one leg of the portal. Hence, Afcons designed the portal in such a way that it can be accommodated in available land, and expanded for future construction.

- Construction of pier cap without pier arm at LAD station: The normal sequence of construction of the pier cap at the station location is to build the pier arm first and then the pier cap. As land was not available at the LAD station and waiting would have resulted in loss of time, pier caps were cast without casting the pier arm.
- Fly-ash was used as a replacement for cement in concrete.
- At Ambazari, the team had to undertake activities around a dam. To maintain the stability of slope of the dam and avoid excavation in the area, the pile cap was constructed above the ground level. It made use of liner while piling to avoid the vibrations of winches at the dam location.
- While making the segments, the team had to change the spacing of bars and increase the diameter of steel while keeping the quantity of reinforcement the same. Also, UPV test was done on each segment.

### Quality materials

The project made use of high-quality materials in the construction of this stretch. As Pai shares:

- Cement was blended with fly-ash and GGBS for the mix design of concrete; this was not only cost-effective but improved the durability of structures.

## Project Details

**Location:** Nagpur

**Total length:** 11 km

**Construction contractor:** Afcons Infrastructure. Tel: 022-6719 1000. Website: [www.afcons.com](http://www.afcons.com)

Architect/Planner: Enia. E-mail: [studio@enia.fr](mailto:studio@enia.fr) Website: [www.enia.fr](http://www.enia.fr)

**Total cost:** ₹4.76 billion

**Design consultant:** Kirti Consultant.

**General consultants:**

Egis. Website: [www.egis-group.com](http://www.egis-group.com);

RITES. Website: [www.rites.com](http://www.rites.com);

Systra. Website: [www.systra.com](http://www.systra.com);

Aecom. Website: [www.aecom.com](http://www.aecom.com)



## SPECIAL PROJECT



Meticulous planning and efficient execution were the key factors that ensured that Nagpur Metro Reach 3 was executed in a record 28 months.

- Micro-silica as mineral admixture was used in concrete, which helped achieve high-grade concrete strength.
- VMA (viscosity-modified admixture) was used in self-compacting concrete for controlled cohesiveness and homogeneity of the concrete mix.
- A curing compound was used that benefitted the time cycle, resulting in acceptable compressive strength.
- Highly fluid epoxy grout (EP-10, Make-Fosroc) and non-shrink grout GP-2 were used for repairing.
- Polypropylene fibre was used in concrete for precast structures (segments), which prevented shrinkage of cracks and increased bonding strength.
- Inhibitor solution was used to prevent TMT bars from corrosion.
- Bipolar admixture was used in concrete for corrosion prevention of TMT bars and had a positive impact on time, cost and manpower.
- Solvent-free epoxy resin grout was used for anchor plate grouting.
- PCE (polycarboxylate)-based admixture was used in concrete for designing workable parameters.
- Omega seal expansion joint was used with high-quality neoprene, which benefitted in terms of the time factor and manpower for easy installation.

### Equipment required

The project made use of unique equipment, including:

- Three piling rigs – for pile foundation.
- Six 40-tonne cranes – for pier/pier cap/portal shuttering and de-shuttering.
- Boom placer – for concreting of pier/pier cap/portal.
- Five 20-tonne excavators with rock breaker – for open foundation.
- Five 60-tonne gantries – for loading of segments and I-girder.
- Nine 60-tonne trailers – for transportation of segments from casting yard to site.
- Two 100-tonne modular trailers – for transportation of I-girder.
- Three launching girders and six GSS – for span erection.
- Three 200-tonne cranes – for I-girder erection and segment erection in GSS.

### Safe and green

Safety and environment-friendly construction measures were taken to protect the safety and health

of every person at site; comply with the relevant statutory and contractual safety, health and environment requirements; have trained, experienced and competent personnel and supervision; maintain plant, places and systems of work that are safe and without risk to health and the environment; provide all personnel with adequate information, instruction, training and supervision; effectively control, coordinate and monitor the activities of all personnel, including contractors, in terms of safety, health and environment and security; and establish effective communication on safety, health and environment matters with all relevant parties.

"Afcons establishes and maintains strong health, safety and environment protocols for any project," says Pai. "We have mandatory, daily briefings by safety officers and the shift in-charge before the shifts every day. For every phase of the project, we planned safety inductions for all workers and employees. All personal protective equipment is checked and maintained periodically to ensure the highest safety of people. We have always followed a safety culture and constantly promote it through various awareness sessions, camps, check-ups, etc." Afcons has clocked 12 million safe man hours in the project till date.

What's more, as this work was undertaken in the city area, all excavated earthwork was properly disposed of at designated locations to ensure it did not affect the environment. Further, standard procedures and protocol were followed at site to reduce energy consumption.

Evidently, the Nagpur Metro is living up to its fast, clean, green promise!

– SERAPHINA D'SOUZA | CW |

Know of a landmark project? Write in at [feedback@ConstructionWorld.in](mailto:feedback@ConstructionWorld.in)



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## "The strength of Kavaratti is tourism."

- **Dr Atul Pandey**, CEO, Kavaratti Smart City

The capital of the Union Territory of Lakshadweep, Kavaratti is well-known for its pristine white sand beaches and calm lagoons. This island city, with a population of just about 12,000 people, was selected in Round 4 of the government's Smart Cities Mission. The vision of this popular tourist destination is to improve liveability and make it an environment-friendly, zero-carbon and climate change-resilient island city. Tourism is among the primary industries on the island with other major industries being fisheries and agriculture. "The city's heritage is its natural beauty," says **Dr Atul Pandey, CEO, Kavaratti Smart City (KSCL)** with pride, as he shares more on developments and opportunities in conversation with SERAPHINA D'SOUZA.

### Tell us about the city's initiatives under the Smart Cities Mission.

The total project cost for KSCL is ₹5.27 billion. Of this, ₹1.80 billion



is from convergence and PPP projects. The net fund sanctioned to the SPV is ₹3.47 billion. There are 27 major projects sanctioned under the mission. These projects are being executed through line departments of Lakshadweep. So far, we have completed two projects of about ₹11.5 (9+2.5) million. One is the introduction of hydroponic cultivation, which was implemented with the help of the Agricultural Department. The total

cost of the project is ₹2.5 million and it was completely funded by KSCL. The second project is a water harvesting project (₹9 million). Notably, Kavaratti is the only city selected under the mission that does not have a ULB. And, the whole city of 4.22 sq km is covered under area-based development.

### What current challenges is the city trying to overcome through smart city projects?

The purpose is to not disturb the environment and, at the same time, provide basic infrastructure and amenities. We currently have one operational desalination plant and are planning to build two more – of 1 lakh litre per day and 1.5 lakh litre per day at ₹1 billion and ₹0.45 billion respectively. Another project under AMRUT, already completed, is that of rainwater harvesting tanks ₹9 million.

Connectivity is a major issue. So we are planning to have dedicated cruise ship connectivity



The whole city of Kavaratti – of 4.22 sq km – is covered under area-based development under the Smart Cities Mission.

### Project Details

Details	Number of projects	Cost of project (million)
Number of projects 100% funded by Smart City project	16	1,284.90
Number of projects 100% funded under convergence	5	1,112
Number of projects 100% funded under PPP	1	48.50
Number of projects partly funded by the smart city project and partly by convergence	5	2,820.70
<b>Total</b>	<b>27</b>	<b>5,266.10</b>

with the mainland. Procurement of an all-weather ship itself costs about ₹2.60 billion; this work will be implemented with the help of the Port Shipping & Aviation Department.

Another area is of Internet connectivity; we are having discussions with the government to hire some more transponders from ISRO to provide Internet facilities. Similarly, we have several projects that are basic, but essential to the people. We are also in the process of planning an integrated command-and-control centre (ICCC) that will cover CCTVs, Internet of Things (IoT) and safety and surveillance-related works. Under pan-city proposals, projects include smart metering for electricity/water; utility mapping – GIS mapping of water supply line and electricity line, transformer, overhead tanks, roads, among others.

#### Brief us about projects that are already ongoing.

We currently have two ongoing projects. One is a multipurpose community hall being constructed at ₹48 million. The other one is being undertaken by the Department of Environment and Forests for solid waste management, which includes smart collection, transportation and monitoring, alerting systems between administration, hospitals and solid waste facilities, at ₹20 million.

#### Any DPRs or tenders to be floated for projects in the coming months?

We are planning to float tenders

for the public bicycle-sharing project at about ₹70 lakh in two to three months. Other projects include beachfront development, walkway, corridor beautification, solar charging centres. Other new projects proposed include urban art with wall paintings, green waste management and bio-methanol plant, and exploring wave and tidal energy.

#### What are the other core infrastructure projects planned for the city?

We are working towards setting up a digital base framework for IT-enabled services and applications at ₹335 million. As mentioned, we are also focusing on e-vehicles and bicycle sharing, desalination plants and solar panels. Moving towards solar energy and e-vehicles would help us conserve and preserve the fragile environment of the city. Our board has also decided to explore renewable energy for which we are undertaking two projects – the establishment of solar rooftop systems in public buildings under convergence at ₹140 million, and solar charging centres at ₹2.5 million.

We are working towards dedicated ship connectivity to improve the transportation facilities. New roads projects are coming up, which include the development of Beach Road at ₹52 million, Arterial road with proper signage and road marking at ₹50 million, junction improvements and smart parking at ₹10 million, promoting and utilising of battery-operated

vehicle for public mobilisation at ₹10 million, and promoting the utilisation of smart bicycles for the public and tourists including a smart docking station at ₹7 million.

#### What about efforts towards effective waste management?

Under convergence, door-to-door collection has already commenced, which covers the whole of Kavaratti. We have a ₹20-million project under convergence that includes a solid waste processing unit, smart collection and transportation. Another project is a 1-mld centralised septage processing unit at ₹72.5 million; and public bio toilets for ₹1.5 million, for which we are awaiting the DPR. We are also planning to buy some machines to dispose off C&D wastes which has accumulated over a period of time.

#### Any challenges faced in city development?

The main challenge is geographical isolation. Hence, a lot of private players are reluctant to work here because the cost becomes high. Secondly, they are not friendly with the terrain, and thus don't have supporting partners on the ground. To overcome this, we have a close collaboration with government departments. The third one is the shortage of manpower or human resources. But we are expanding and hope to have a good team in a month or two.

#### What is the one thing about the city you are really proud of?

Its natural beauty! The strength of Kavaratti is tourism. In fact, we are collaborating with the tourism department and have several projects under the PPP model. Further, we are also planning an international quality Dive Centre in collaboration with the tourism department.





# Rating Agencies: BOON OR BANE?

With a market cap close to \$2.5 trillion, India is now the seventh largest stock market by capitalisation, ahead of even Germany. It is time our rating agencies play their part in ensuring credibility to bring liquidity and depth to our bond markets, writes SALIL DATAR.

India has so far taken the right steps to ensure its capital markets flourish and provide access to funds to companies wishing to access them. However, over the past 12 months, on the debt side, there have been a series of mishaps in the form of ILFS, DHFL, ADAG, Cox & Kings and Altico Capital, leading to a complete collapse in the debt market and a crisis of confidence. For their part, rating agencies have failed to play a proactive role in monitoring and providing advance warning to investors. Instead, they have been rerating papers after issuers announce a default.

Now, the time has come to ensure similar liquidity and depth to bond markets, which are yet to come up to expectations. For this to happen, rating agencies have a crucial role in ensuring credibility by providing investors information on the bonds/paper wishing to access the capital markets.

## Purpose of rating

Large and complex investment projects or businesses are financed by way of a combination of equity and debt. The equity leverage could be 1:2 or 1:3/1:4 or 1:5 depending on the type of activity and the gestation period for commissioning the project. Similarly, banks and finance companies raise resources in the ratio of 1 x 10 to fund their



lending activities. In earlier times, development financing agencies (DFIs) like ICICI, IFCI or IDBI would employ an army of financial analysts to pore over the details to understand the project under consideration or the business model of the client, cashflows, financial leverage, liquidity and sustainability of business model and cash flows, and run a sensitivity analysis to arrive at a decision before taking the plunge or advising investors or financiers on investment grade.

As industrialisation and private enterprise picked up, so did the pace of growth and the need for financiers to scale up the resource-raising exercise. However, as banks and DFIs failed to keep pace with the growth in companies wanting to raise resources, companies started reaching out to the public to access larger pools of money. This accelerated the pace of disintermediation. The traditional model naturally became an inefficient, time-consuming and

non-scalable option. Rating agencies stepped in to fill this gap by providing rating services to assess the financials as well as surveillance or monitoring. As investors started relying on rating agencies to evaluate the risk associated with the financing of projects and businesses enterprises as well as to price the RoI at which the investment would yield a risk adjusted return, the dependency risk for financiers, based upon the rating from agencies, also went up.

Credit-rating agencies in association with global rating agencies such as Standard & Poor, Moodys and Fitch Ratings can also provide a 'neutral' opinion on the instruments to be rated. Similarly, leading Indian rating agencies, being subsidiaries of global agencies, have access to sophisticated, scientific models that can gauge the financial health of the entity to be rated.

As the need to provide liquidity to these instruments started to build, exchanges, in order to improve the marketability of bonds, non-convertible deposits (NCDs), perpetual bonds, certificate of deposits and commercial paper, started insisting on having the investment paper rated before allowing it to be listed for trading. What's more, in addition to the initial rating of the instruments, credit-rating agencies undertake the surveillance of rated instruments till they mature.

### Conflict of interest

As a result of this, while raising resources, companies started to proactively enrol rating agencies to get their bond/paper rated in order to attract investors. The rating agencies would be appointed for a fee by the company planning to raise resources. This fee would be a percentage of the amount

being rated. Here, the conflict of interest starts.

Instead of completing thorough due diligence, to expedite the rating process, agencies started relying on declarations and management representations, which in turn diluted the rigour of the screening process.

Can a rating agency, which is being paid for by the company, afford to give a true, fair and independent view of the company paying for the exercise?

The outcome of this is open in front of the public, in the form of cases like ILFS and IDBI Bank in India, and Enron, AIG and Lehman overseas, to name a few.

### How do we overcome this conflict of interest?

It is essential to be able to segregate the roles of the agency, the entity being evaluated and the entity who pays for this exercise. Typically, the entity commissioning the rating exercise should be a third party, which has a larger interest in playing the role of market maker.

It is here that listing agencies like the stock market or exchanges have a crucial role to play. As the role of the listing entities is to build trust by ensuring equal information is made available to all those interested and freely available across various investor classes, it is in their interest to resolve the conflict of interest. At present, the exchanges require the entities wanting to raise resources to accept their listing rules and regulations, which cover areas of financial disclosures, management best practices, disclosures about arm's length transactions and so on. They charge them enrolment and listing fees as well as renewal fees every year and hold them subject to scrutiny by their compliance committee or

board. Besides this, regulatory agencies such as SEBI also have a role to play. They set up guidelines and regulations for companies accessing the capital markets. To facilitate investor education and dissemination of best practices across companies and investors, SEBI has set up an Investor Protection and Education Fund (IPEF), which is funded by way of contributions from unclaimed dividends and penalties on companies flouting regulations. The balance in this fund currently stands at over ₹12 billion.

As independent entities and providers of a platform to investors, exchanges should take on the role of empanelment of rating agencies as eligible to rate the paper or instrument being listed. As part of the enrolment process/listing fees, the exchanges should charge rating agencies as well as the company whose paper is being rated an annual fee or per instrument, which could act as an investor protection fund in cases of default. Besides the exchange-empanelled rating agency, companies should also be allowed to appoint a rating agency of their choice as well if they desire. This will provide free and independent information to investors to arrive at a decision.

Indeed, India must embrace the change to provide the much-needed credibility and trust to bring liquidity and depth to the bond markets, which in turn can turbocharge economic activity.



**About the author:**  
Salil Datar, COO, Essel Finance, is a finance professional with more than 25 years of industry experience in leadership roles across consumer banking, finance, marketing and sales, cross selling, and operations. He has been observing the BFSI space for over two-and-a-half decades.

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## ON CONTRACT

TO SHARE



# "We have been growing at more than 25 per cent YoY in the past two years."

- **Neeraj Vijay**, Director, Chetak Enterprises



Quality, timely deliverables and cost management – these three attributes define the focus of Chetak Enterprises, a leading player engaged in the development of national and state highways across India and Africa. The firm has developed over 1,000 km of highways in India and is currently executing projects worth ₹60.63 billion. Known for its strong presence in developing highways on a PPP basis, it also has a separate EPC division for the development of roads on EPC mode in India and overseas. **Neeraj Vijay, Director, Chetak Enterprises**, shares more on the company's plans, in conversation with SERAPHINA D'SOUZA...

**How does the company seek to ensure quality, with timely deliverables and cost management?**

Proper planning, micro-level monitoring and inventory control are the key to timely execution of

projects. Cash-flow management is of utmost importance. In this regard, detailed planning before start of work and quarterly, monthly and weekly target framing with optimum utilisation of resources is important. This must match with the fund flow. Further, timely completion of design, drawing work and finalisation of subcontracting agreements play a crucial role in achieving targets. It is not just one or two factors but optimum (not maximum) utilisation of various synergies that helps us achieve our deliverables.

**How have high in quality but low in cost materials helped in executing landmark projects?**

Quality and cost are two important facets that can never be correlated in absolute terms. Quality and optimum cost, coupled with timely execution, are to be

synergised for landmark output.

One of our recently completed projects is the 21.6-km stretch (Dasna-Hapur) of Delhi Meerut Expressway, which includes a 4.68-km, six-lane elevated road. In the project, segmental construction was ruled out because of restricted carriageway and ultra busy road. So, we adopted a new construction methodology of casting maximum components offsite, which included fabrication of pile cages, precast pre-tensioned girders and precast post-stressed pier caps. Erection was undertaken by gantries. We used high-grade RCC (M-55) with micro silica and admixtures, resulting in early demoulding and use of steam boilers for gaining early strength.

The use of high-grade material looks to be a costly affair in absolute terms, but this resulted in considerable saving of time and



One of the company's recently completed landmark projects is the 21.6-km stretch (Dasna-Hapur) of Delhi Meerut Expressway.

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## ON CONTRACT

### FACT FILE

- **Year of establishment:** 1991
- **Top management:** HC Jain, Managing Director; Neeraj Vijay, Whole-Time Director.
- **Segments of operation:** Roads, highways and expressways
- **Centre of operation:** Mumbai
- **No. of employees:** Over 2,100
- **No. of completed projects:** 12
- **No. of ongoing projects:** 5
- **No. of upcoming projects:** 5
- **Turnover:** ₹9.30 billion
- **Order book:** ₹60.63 billion.



In the Dasna-Hapur stretch of Delhi Meerut Expressway project, the company has used high-grade RCC (M-55) with micro silica and admixtures.

we could complete the 4.68-km elevated structure in less than 20 months. The extra cost invested turned out to be cheaper as it ensured timely execution in a HAM project.

Similarly, for Shimla Bypass, we designed a cable-stayed bridge with steel girders to make the structure light, as achieving M-55 was not possible in the cold weather. To conclude, cost alone is not the criterion for prudent construction planning.

#### Your in-house structural design team works on innovative methodologies...

Yes, the company has a strong team that oversees the designs being prepared under the aegis of expert consultants. The design stage is of utmost importance for any project as the philosophy adopted at this stage ensures timely and cost-effective completion.

#### Tell us about your equipment bank.

We have a fleet of equipment ranging from 250-300 TPH crushers to hot-mix plants, concrete batching plants, PQC pavers, and all other equipment needed in road

construction. Purchase and procurement decision-making for equipment is done at the time of project award and is centralised at the head office. The total requirement of equipment for a project is decided based on the terrain, project size and quantum of work, and time required for completion. There is decentralisation of power for demand assessment and for taking stop gap requirement on rent, but purchase of major machinery is decided at the apex level.

#### Which execution model do you prefer, and why?

Every model provides ample opportunities to contractors and developers to deliver. Having said that, HAM is the most balanced model as it takes into account the interest of all stakeholders. It gives enough liquidity to the developer and the financial risk is shared by the government. For a company with strong financials and good execution capacity, HAM brings on the table what other models cannot.

#### At present, what are the painpoints in the construction sector?

The main challenge is the

reluctance of financial institutions to invest in projects as they are averse to the idea of HAM and BOT. HAM is the most balanced in terms of risk and finances. It is known that the government cannot fund the entire infrastructure needs of the country and, therefore, private parties must join in to speed up the development. The biggest pain point today is that the failure of one company becomes a benchmark in the eyes of financial institution and makes them apprehensive towards the entire sector or all companies.

#### How is the company performance? What are your expansion and growth plans going forward?

The company has performed well over the years and we have been growing at over 25 per cent YoY in the past two years. This year, too, we are expecting a similar jump. We are executing projects in Africa as well, but construction of domestic projects have contributed the most to our turnover. As far as further expansion is concerned, we are planning to go at a similar pace in India and explore more opportunities in Africa.



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# WHAT AILS ARCHITECTURE IN THE PUBLIC SPACE?

From a paucity of projects to issues surrounding bidding, interacting with authorities, fee structures and more, six leading architects address the challenges the public sector presents.

## DEARTH OF PROJECTS

"More than 90 per cent of the architecture in India is developer-driven; the government isn't doing anything much," says **Sanjay Puri**, **Founder, Sanjay Puri Architects**, noting that overseas, over half the projects are government or foundation-driven. "The value of government or foundation-driven projects lies in the fact that those agencies are more likely to prioritise sustainability while private developers typically only look at monetary aspects and building saleability."

Sometimes, you need to map a process to spur the creation of essential urban development projects, suggests **Ayan Sen of Ayan Sen Architects Urban Designers and Planners**.

Two years ago, Sen saw the possibility of creating a linear green corridor at the edge of a canal. Canals are an integral part of the landscape of Kolkata but they were increasingly perceived negatively as their edges were unkempt places no one wanted to visit. "In conjunction with the Indian Institution of Architects, I organised a design hackathon among students to brainstorm ideas to develop and revitalise a 5-km stretch of canal. This fell within the jurisdiction of the chairman of the development authority (Housing Infrastructure Development Corporation). A DPR was drawn up and a ₹150 million project was conceptualised and is now being implemented. Our

work was appreciated and we went on to design a bridge and the landscape at the edge of the canal. We charged nominal fees for this extension to the conceptual ideation by students."



**"More than 90 per cent of the architecture in India is developer-driven."**

- **Sanjay Puri**, Founder, Sanjay Puri Architects

## POORLY PLANNED PROJECTS

"By and large, our experience has been that private players know exactly what they want from projects by way of a pre-design brief for the project and programming while in the government and semi-government sectors, projects are not as clearly defined at the early stages, causing multiple midway changes," says **CN Raghavendran, Partner, CR Narayana Rao Architects**. "It would help if projects were planned by a core committee that is well aware of the need."

Also, to speed up decision-making surrounding all aspects of a project, those involved in planning should be authorised to take appropriate and timely decisions, he adds.



**"It would help if projects were planned by a core committee that is well aware of the need."**

- **CN Raghavendran, Partner,**  
CR Narayana Rao Architects

## CONTINUANCE OF GOVERNANCE

"Continuance of governance is a concern," says **Vivek Singh Rathore, Design Principal, Salient Design Studio**. "Why should a project of public interest that has been cleared by the Cabinet and/or finance department be called off just because of a change in the ruling party? Politics should not impact the creation of essential infrastructure."

In the last year alone, Salient Design Studio has experienced seven project failures owing to change of governments. "You spend a couple of years planning a project and when it is time to execute it, it is called off. Obviously, this causes a huge financial loss to the awardee," points out Rathore. "The decision reversing the choice of Amravati as the capital of Andhra Pradesh is a good example of what the change in government can do to projects."

"When project timelines are limited, continuity isn't a concern. But when projects stretch for too long, the

stakeholder who is the prime decision-maker keeps moving," notes **Sonali Rastogi, Founding Partner, Morphogenesis**.

In the context of most urban projects in the government sector that are being run through the smart cities project, a laudable initiative for reviving many cities that were becoming derelict, Rastogi explains the lacuna in the current methodology. "Different bureaucrats might have different priorities within the same broad vision of a smart city," she says. "One might prioritise roads, the next parks, a third digital infrastructure. A lot of useful projects then get underway but none get completed and the public simply does not feel the benefit. Also, those involved in the implementation suffer project delays."

"Currently, the smart cities mission is being implemented step by step, and these steps are too tiny to be visible and, hence, enthuse the public," adds Rastogi. For instance, a project mandating the renovation of city routes might be worked on kilometre by kilometre, which doesn't make a notable difference to the lives of people. So, while the chain of processes followed to implement smart city projects is accurate, from policy design to project conceptualisation to pilot designs and final project design, timelines need to be curtailed.



**"Smart cities is being implemented step by step; those steps are too tiny to be visible, and enthuse the public."**

- **Sonali Rastogi, Founding Partner,**  
Morphogenesis

## LACK OF TRANSPARENCY

"Projects should be genuinely competitive," says Rathore. For this to happen, he suggests making the project tender public in a transparent manner, which means publishing it in national journals and newspapers, not merely in regional publications. It would also help if a website is dedicated to publishing details of project notifications. Indeed, lack of transparency keeps a lot of good architects away from government projects.



## DELAYED WORK ORDERS

Scott Knox, Studio Director of Design, Creative Group, rues delays in issuing work orders following bidding and believes it undermines good planning. "It is in bad faith for an authority in a PSU to ask a professional to produce drawings, specifications, cost estimates and make multiple presentations month after month before signing their contract," he says. "This is typically under the guise of 'trying' to understand the project. This tactic is 'trying', but fundamentally this shifts the risk from the planning end of a project towards the construction end. The burden of this shift short-changes the planning process and hurts the project in terms of public-sector credibility and commercial-sector viability. This ultimately shows in the results."

Knox advocates a clear and timely bid process: "Announcement, receipt, review, selection and award in a fixed and transparent schedule." In addition, commencing the project with the professional's first payment and linking subsequent payments to each deliverable, and withholding a final payment with substantial completion.



**"Announcement, receipt, review, selection and award in a fixed and transparent schedule."**

- Scott Knox, Studio Director of Design, Creative Group

## TRUST DEFICIT

To speed up the creation of infrastructure, Knox would like to see authorities place their trust in firms selected to deliver projects. For instance, he shares the example of the recently completed Kartarpur Terminal and Punjab-Pakistan corridor project, which the Creative Group has been involved with. "We designed and developed a 15-acre master plan, 28,000 sq m complex in five months. What helped was that our design-focused client (Land Ports Authority) raised process over politics by entrusting sitework decisions to our principal architect, Gurpreet Shah. All the stakeholders – Land Ports, Shapoorji Pallonji and the Creative Group – adopted a collaborative process that expanded the circle of trust."

## MONO-FOCUS ON LOWEST COST

There is a mono-focus on L1 (lowest cost) that is a challenge for firms bidding for railway, airport, metro and other infrastructure projects, according to Knox.

"If the quality and completion of projects were only dependant on cost, the L1 system might be appropriate, but it's not and never has been," he explains. "The firm's and individual's direct experience in designing and building infrastructure projects is critical, not a luxury, especially as the project gains in scale and complexity. However, practically, the criteria ratio of technical qualifications to cost is almost 0:100, with quality on the losing side."

"L1 is not a criterion for getting good consultancy," agrees Rathore.



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What are some of the disadvantageous outcome of the focus on L1?

"An L1 bidder with minimal (and below) verifiable technical competency winning a bid for large-scale projects can create considerable financial and safety risks to users," says Knox.

"In the government sector, by and large, too much emphasis is placed on the cost of projects," says Sen. "Design is considered but not exclusively, which is somewhat off-putting for architects wanting to do standout projects. The idea of creating unique contextual projects with minimum complication is the way ahead."

To eliminate this challenge, Knox recommends simple guidelines to verify the bidder's qualifications, soliciting competitive bids and balancing the firm's qualifications and bids. The criteria ratio may be 50:50, 30:70, or whatever split is reasonable given the project complexity, in deciding who to award the bid. "Simpler projects may do well even with a low qualification percentage," he says. "However, complex projects, such as the redesign of railways in the heart of cities where expectations span from world-class stations to last-mile connectivity, require demonstrable qualifications."

"It would be more helpful for the government to fix standard fees and then evaluate the bids in terms of designs," suggests Rathore.



**"In the government sector, by and large, too much emphasis is placed on the cost of projects."**

**- Ayan Sen** of Ayan Sen Architects Urban Designers and Planners

## TOO LOW FEES

In projects where architects get paid fees, India lags considerably behind the West.

"In India, architects typically get paid 2 per cent of construction costs whereas in Europe, they get 8-10 per cent, and the cost there is far higher," observes Puri. "NBCC (National Buildings Construction Corporation) projects pay architects 1 per cent of the project cost as a consolidated fee, which includes the structural consultants' fee and landscaping fees. At

such low rates, it is impossible for architects to provide comprehensive services. Most of the time, architects are called to present ideas in competitions without any compensation."

"Project terms should be fair," adds Rathode, alluding to the lack of escalation clauses in many projects. "Rates are worked out on prevailing conditions and project delays often happen for no fault of the architect. Without an escalation clause, your choice is to suffer or quit."

Puri advocates strengthening the Council of Architecture by legislating a law that necessitates that the guidelines of the council are followed.

Trying to recover payments is also challenging, according to Puri. In particular, he cites the challenge of not getting paid for reworking a project even if the redo was mandated by an incorrect understanding of the authority.



**"Project delays often happen for no fault of the architect."**

**- Vivek Singh Rathore**, Design Principal, Salient Design Studio

## INAPPROPRIATE BUILDING RULES

Some building rules are inapt. Some are conspicuously absent. Both are a concern for architects.

"City rules are a challenge and Mumbai has by far the worst building rules in the world, some of which are downright detrimental to planning," observes Puri. For instance, he cites slum rehousing rules that allow two 20-storey buildings to be built 3 m away from each other. "How do you expect people to live well without adequate ventilation?" he wonders.

"Nowhere in the world is an open terrace counted in built-up area except in Mumbai," adds Puri. "In a space-starved city, we are compelled to design tiny flats. Giving people a small open space would be a boon but it can't happen because the guidelines don't encourage that."

Coming to non-existent rules, he observes, "Our cities struggle because amenities come up without any



traffic impact analysis. In Dubai, say, plans for a mall submitted for approval will necessitate a traffic impact analysis to determine if the road infrastructure can take the increase in traffic. However, in India, malls have been built randomly on main roads, causing traffic snarls and public inconvenience."

Sometimes, other rules associated with projects are unsuitable.

"A PMC clause (project management consultant) is not justified for many projects where it is made mandatory, which puts off many good architects," opines Rathore. He believes it isn't essential for an architect to maintain a PMC to practice well and, in many instances, an architect would show an affiliation with a PMC simply to win a project.

## DEALING WITH THE GOVERNMENT

Architects cite concerns over interacting with the government.

"Getting clearances from multiple government authorities is challenging," says Rathore. He advocates the creation of a single window authorised to accept documents related to a project, and made responsible to get the necessary approvals. This would make the implementation of public infrastructure projects smoother and quicker for non-government players entrusted with executing them.

Even projects that don't involve bidding present challenges associated with negotiating with the government. "Where there is no bidding, you must know how to politically manoeuvre your way through layers to get a buy-in for your suggestions," says Sen. He shares an example: "While implementing a

hospital project that was not tendered but sublet by the contracting company that had won it, which was skilled in building roads and bridges for the PWD but not in designing hospitals, I realised that the colour palette was meant to follow guidelines for government buildings, which are mandated to be painted white and blue. We proposed an additional grey and white option. And managed to push it through by pointing out to the concerned minister that as the urban development authority did not have the skills to run a hospital, and it would have to be run as a PPP, it made sense for the hospital building to stand apart from government structures."

## CLOSING THOUGHTS

The traditional ecosystem, with the client ~ architect ~ consultant ~ contractor model is changing rapidly, notes Raghavendran. "But it is yet to evolve into a transparent, design-driven, sustainable, integrated, fully code-compliant profession to service the complexities of the future. A lot has to be debated and changed to make the professional impact on built environment holistic and performance measurable. It may be time to rethink how professionals are engaged and work together under a designated fee structure and responsibilities, which are currently guided by the Architects Act of 1972, the NBC's guidelines, local authority bylaws and 'not-so-desirable' trade practices, to determine whether the respective responsibilities of those involved, including fee structure and methodology guiding payments to architects, are realistic."

- CHARU BAHRI 

To share more on the challenges the public sector presents, write in at [feedback@ConstructionWorld.in](mailto:feedback@ConstructionWorld.in)





# “We are moving well towards achieving our ₹30-billion target.”

- **Prakasan TP**, COO, MEP Business, Sterling and Wilson

From being an electrical contractor in the 1980s to becoming the subcontinent’s largest mechanical, electrical and plumbing (MEP) and EPC business today, Sterling and Wilson (S&W) has come a long way. The MEP Business of the company has grown from a turnover of ₹14.33 billion in 2012 to ₹17.26 billion in 2018-19. S&W is one of the few engineering companies in India with a 360° service offering in MEP, encompassing HVAC, electrical, fire-fighting, fire-alarm, fire-detection, fire suppression and plumbing. **Prakasan TP, COO, MEP Business, Sterling and Wilson**, shares more on the market and the company’s plans and opportunities, in conversation with SERAPHINA D’SOUZA.

**A lot has changed over the past decade, from a time when not much was spoken about specialised services, such as MEP, electrical, plumbing, paints, façade works, insulation, lighting and waterproofing, among others. How do you see the market’s evolution for specialised services?**

Historically, the market was fragmented, with contractors doing electrical, HVAC, plumbing, fire-fighting and BMS. But this was not helping customers and contractors. The Middle East and Europe had long ago merged all these services into one and started enjoying the benefits for customers and contractors. India was once dominated by so-called technical consultants who wanted to have control on a particular segment.



So an electrical consultant wanted electrical contractors and customers giving electrical orders directly to them. But over a period of time, productivity came under pressure. Another aspect is technical innovations, part of which is integrating things. Speaking of productivity, a few years ago, when India started growing in IT development, project management consultants came into the picture. To improve productivity, customers started looking for a good project management consultant and a good contractor who could do all the services.

At Sterling and Wilson, we had five business verticals. We decided to club all these verticals into one business unit, namely MEP, when we saw a strong market demand for an integrated MEP service. Functionally speaking, when you execute individual projects pertaining to electrical, HVAC, fire-fighting, etc, there are conflicts.

If all these works are done by one contractor, the entire project can be well-managed. It helps innovation; there is a technical advantage on a functional level as well as productivity. The market has started moving towards this and it has provided for a lot of opportunities in the market.

**With the company integrating its entire MEP business, you are targeting a ₹30-billion revenue from the business this year. How are you working towards achieving this?**

Yes, we had planned a target of more than ₹30 billion, and are moving well towards achieving it. There are certain market challenges, so we have restructured our approach. Our new businesses – industrial EPC (IEPC), Process Control & Instrumentation (PC&I) Mechanical EPC (MEPC), Industrial Fire System and Flue Gas Desulphurisation (FGD) – have received good market response. This year, a lot of FGD jobs are getting closed. So, we will get around ₹15-20 billion orders from the MEP segment and the balance ₹10-15 billion will come from the IEPC segment, which is primarily from infrastructure development.

**Which infrastructure segment is driving demand for MEP services?**

The airport segment is driving major demand; a lot of ports and metros are also coming up. In the South, there are opportunities in the IT buildings and commercial space and some industrial projects are

also coming up. Other regions are growing by infrastructure growth capabilities coupled with some IT and industrial projects. Majorly, metros, ports, airports are driving demand.

### Speaking about real estate in particular, are developers now outsourcing speciality services for their projects?

This is a trend we have seen. We are working with a few top builders for complete MEP works for their projects. With RERA, builders are focused on delivering on what they commit and realise the need of speciality services coming from companies such as ours. So this trend has picked up. And developers have realised the need to engage good contractors.

### As a specialised contractor, when do you get involved with a project?

Our efforts have been to make customers realise the need for MEP and to convert their entire spectrum into MEP and get benefits from it. We talk to customers about the advantages of converting the entire project to MEP. We try to engage in the early stages of project inception and discussion. There are also customers who understand the performance-building concept. To elaborate, in a normal building you can do any kind of contracting, but when it is to be given to an IT company or a bank or office, the productivity factor comes in. There are companies converting normal projects to MEP. For any business, the key is to get involved in the initial stages because that is part and parcel of the entire thought process of customers.

### In terms of technical advice, what value-adds does the company offer clients?

Our value-add mainly comes in

the form of energy-efficiency. We need to have systems that will take care of the maximum load but are controlled by an automated system that senses each and every aspect of energy management. This helps reduce the operational and energy costs. Another thing catching up is light management; the right light levels are required for better productivity and oxygen levels. These are all areas where we provide value-added services, which encompass design of HVAC systems, water supply and lighting.

### Speaking of impact on operational efficiency, how much of the project cost does specialty contracting constitute? Also, what is the Rol involved?

It depends on the segment and type of contract. While it would be difficult to put a number to it, on average it would be around ₹750-800 per sq ft, but it depends a lot on the composition of things.

As far as Rol is concerned, we do not get into that aspect because the

customers decide it. Having said that, our integrated approach provides the customer the benefits of operational cost reductions and productivity enhancement. There was a tendency for people to only look at the capital investment – Capex, the one time investment they were making. They were not really focused on the operational expense. Capex plus the depreciation plus the Opex becomes an entire cost for the customer. It can reduce operational expenses, considering the building has to be there for 30-35 years. Hence, delivering the right quality is key as is the reduction of maintenance management of systems.

### What challenges is the industry in India facing? How are you strategising to overcome these?

We do a market movement analysis every quarter. Last February-March, through our analysis, we realised that there were a lot of opportunities and



The company has undertaken complete MEP work for the Supreme Court of India in New Delhi.





The company has undertaken complete turnkey MEP work for the Cochin International Airport, India's first airport to be completely powered by solar energy.

these are still there, but decision-making has become a little slow. While customers are still serious about projects, they are differing. We have started focusing more on infrastructure projects now. So all across, we have a lot of orders to the tune of ₹20 billion coming from mega projects and we are focusing on another ₹10 billion for infrastructure projects – industry and process control and automation. In some way, we are compensating for the reduction happening in other segments by focusing more on infrastructure projects.

**The company plans to enter international geographies like Bangladesh, Bhutan and Nepal and beyond...**

We will not focus much on international business. Nepal has certain opportunities, but more in tourism with a lot of hotels coming up there. Bhutan, not so much. Bangladesh is giving us several

opportunities. We have started work in Bangladesh to focus on large World Bank-funded and JICA-funded jobs. In addition, we are going to take up industrial EPC in Africa and the Middle East. Our activities have already started; the registration process in the Middle East is going to happen. We will get into these territories and further develop in these areas.

**The company currently enjoys a 15 per cent share in the domestic MEP market. Tell us about the company's performance last year and plans for this year.**

Last year, over 50 per cent of our order book in India came from integrated MEP orders. A certain amount is coming from the regional business, so that is the top-line growth part. As for revenue, as we had around ₹20 billion of orders last year, this year will not be a problem for us. It is with the backlog and orders coming in that

we hope to commit to the financial numbers this year as well. In case we do not reach the numbers from MEP, our other businesses need to develop, which is already happening.

We identified a shift in the market from the private segment to government segment, which is primarily infrastructure jobs. We have formed a mega project scheme that will take care of large projects of ₹1.50 billion and upwards. As the SP Group is also focusing on certain infrastructure projects, there are internal works that will help develop our business. Further, we will be working with other general contractors who are focusing on tunnel jobs, ports and airports. The industrial PPP, oil and gas segments are going up and will give us certain growth. What's more, there are a lot of automation and IoT projects coming up. So we can continue our growth story even with the challenges in the market.

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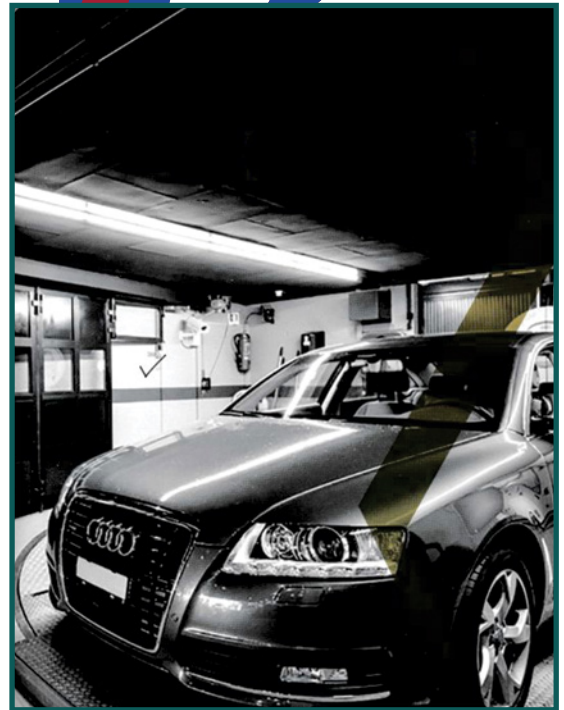
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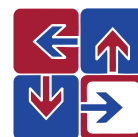
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# SELF-SUSTAINABLE

Godrej & Boyce's Plant-13 Annexe Building in Mumbai has, over the years, demonstrated consistency in performance in its operation and maintenance.

India's commitment towards reduction of emissions intensity by 30-35 per cent from 2005 levels by 2030 poses a significant challenge to the industry. Strong policy interventions along with heightened investments in sustainable energy remain the major catalyst of energy transition in developing countries.

The construction industry has a significant footprint in the consumption of resources such as energy, water and material, and generates a significant amount of waste, which has a significant impact on the environment. The leapfrog of urbanisation in the past decade has necessitated a more responsible and sustainable approach towards the construction of buildings.

The green building movement has made rapid advancements since its inception in 2001. The adoption of 'green' in all aspects of design and construction has been embraced by stakeholders such as architects, developers, MEP contractors and green building consultants, builders, suppliers and manufacturers.

## Creating benchmarks

Recently, a new benchmark was created in the field of 'Performance

Monitoring' of energy and water systems in buildings. The Plant-13 Annexe Building, part of Godrej & Boyce's Vikhroli campus in Mumbai, was awarded the IGBC Performance Challenge 2019 for Green Buildings - Excellence Award, which celebrates operational efficiency of green-certified buildings.

Attaining a 'Net-Zero' status is only the beginning, but maintaining it is a challenge. Plant-13 Annexe is a multiple-use office and convention centre and, over the years, this building has demonstrated consistency in performance. **George Menezes, COO, Electricals and Electronics, Godrej & Boyce**, shares more on how the project has been designed and constructed...

## Strong planning

Existing buildings far outnumber new ones. The idea, therefore, behind IGBC-EB (Indian Green Building Council-Existing Building), IGBC NZEB and BEE 5-Star certifications for existing buildings was to demonstrate the fact that with an incremental investment and some smart efforts, it is possible to improve the operational performance efficiency – energy, water, waste management – of the building's systems.



**George Menezes,**  
COO, Electricals and Electronics,  
Godrej & Boyce

A well-planned process of systems integration has been applied at the Plant-13 Annexe Building, right from the conceptual design stage, and carried forward in the operations of the building. Environment-benign features as per green building principles had been incorporated during the design stage; for example, the building envelope demonstrating good thermal properties, glazing, insulation on the roof, native and adaptive landscape, energy and water-efficiency, and material management, among others. Also, all the materials used for the project were from the Godrej ecosystem – local and green.

To get the building operational, several teams were involved. Godrej Electricals & Electronics, along with

TO SHARE



Godrej Construction, and its Audio Visual Solutions, worked together with the architect to ensure timely delivery. Monthly reviews and SOPs for all tasks further contributed. Together, teams would meet and update on progress. This was critical to making the building operational.

### Software success

Godrej & Boyce made use of software for the building's simulation to understand possible operational conditions and work out the base case for energy consumption in the building. Another software was used to monitor energy end-use at a system level. There are about 30 energy meters installed to monitor energy at an equipment and entity level. The idea behind using data informatics was to have insightful and actionable information on the operations of the building. Further enhancement of this system is being planned to institutionalise the mapping of energy data in real time. This aspect is critical to understand energy consumption in the real-time operations of the building's systems. Renewable energy generation is also monitored on a real-time basis and has trend and historical reports that assist the facility team in analysing the performance of the system.

### Overcoming specialty challenges

The design brief for heat load in the building was in a range from 10 per cent to 100 per cent. Chillers were selected to handle the vast variance of the heat load. Two 250 tr and two 125 tr water-cooled chillers (redundancy of one chiller in both capacities) were installed. This has resulted in quantum energy savings by rendering flexibility in operation of either the 250 tr and 125 tr chillers or both, as per the

## Impact on Operational Cost

By virtue of design of the Plant-13 Annexe Building, most of the building spaces are exposed to natural daylight. The design of a centralised air-conditioning system had taken into account the diversity of occupation of the building.

System-level monitoring and analytics of HVAC, lighting, ventilation, energy consumption and solar PV generation on a daily basis resulted in the identification of potential energy-saving opportunities as well as control of operations.

An investment of Rs 0.15 million to institutionalise a system-level metering system has yielded significant benefits by way of monitoring and control of wasteful energy in the building.

- Energy consumption reduction since the past two years: 7 per cent
- Energy cost reduction since the past two years: 8 per cent
- Total energy from renewable sources (rooftop solar PV): 8 per cent.

An investment of about Rs 0.8 million towards metering, lighting retrofits and VFD on blower has resulted in savings of Rs 0.8 million per annum. And the investment has paid back within one year. The total time taken for retrofit was six months.

heat load demand in the building. Further, tracking performance of the solar system on a daily basis has resulted in optimising the performance of the system.

In terms of lighting, the project switched over to LED from conventional PL or CFL lamps. And the kitchen blowers were retrofitted with VFDs.

Speaking of challenges faced, stakeholder engagement at various levels posed a significant challenge to sustain the efforts undertaken on performance monitoring. As the building has a history of nine years of operations, the team has scheduled an energy audit of the air-conditioning system to have a detailed scientific assessment of the performance of every equipment and system as a whole. The rough estimate indicates an energy-savings potential of 15 per cent with regard to current energy levels.

### Maintenance all the way

The operations and maintenance are taken care of by an in-house

team at Godrej. With chillers being a critical and highly technical equipment in the air-conditioning systems, the team has an AMC with the OEM.

The Plant-13 Annexe Building has won several accolades, including the IGBC-EB Platinum Rating under the Existing Building certification and the BEE 5-Star Rating, which further certifies the building to a Minimum Energy Performance. With the IGBC Net-Zero Rating, the building has achieved the unique status of being self-sustainable by being fully powered by onsite and offsite renewable energy sources.

The award was a result of the efforts put in by the Energy Conservation (ENCON), Green Building Consultancy Services (GBCS) team of Godrej Electrical and Electronics along with the Godrej Construction team, Plant 13 Annexe Facilities team and Corporate Personnel & Administration team.

- SERAPHINA D'SOUZA

To share details of any green initiatives, write in at [feedback@ConstructionWorld.in](mailto:feedback@ConstructionWorld.in)





# Real Estate and State of Homebuyers

Following the finance minister's announcement of setting up a ₹250 billion fund – in the nature of Category-II Alternative Investment Funds – real-estate developers will be able to complete construction and revive stalled projects, say ARADHANA BHANSALI and MANASI PADWALKAR.



The acts of real-estate developers have had multiple effects not only on homebuyers, depriving them of their legitimate rights to enjoy and occupy their respective flats in a time-bound manner, but also on the entities carrying out the projects crashing down, leading to a total standstill of housing projects.

For decades, the mentality of the developers has been feudalistic, with them asking homebuyers to sign unilateral agreements with harsh payments terms such that even one day's delay in paying an instalment invited an obnoxious interest rate and all such monies were paid by

genuine homebuyers endlessly waiting to get their dream homes.

Cases like Nikhil Mehta v. AMR Infrastructure, Jaypee Infratech (Chitra Sharma and others v. Union of India and others), Amrapali Group (Bikram Chatterjee v. Union of India) and Pioneer Urban Land and Infrastructure and others v. Union of India have moved the heart of the courts where the plight of several 1,000 homebuyers were discussed on account of stalled housing projects.

Even developers who are genuine and keen to complete projects are unable to do so on account of the

general economy being in a gloom. It has become rather difficult for such developers to avail help from financial institutions and NBFCs as they themselves are facing flak from the Reserve Bank of India (RBI) on account of their lapses and cases like IL&FS and DHFL, further making the situation topsy-turvy in terms of completion of housing projects.

On November 6, 2019, the finance minister made an announcement on the establishment of a ₹250 billion fund, in the nature of Category-II Alternative Investment Funds (AIF). With the government,



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# CW DESIGN BUILD LEGAL ZONE

Life Insurance Corporation (LIC) and State Bank of India (SBI) acting as the main sponsors, the influx of funds would revive delayed projects that have been stalled and address the pleas of homebuyers with capital stuck in housing units. This announcement has given a much-awaited reprieve to homebuyers, particularly those from the lower and middle-income categories who were worst hit.

## 'Special window'

The government will set up a Special Window, through an AIF. Out of the ₹250 billion fund, the government will make an initial contribution of ₹100 billion, while the SBI and LIC will provide an additional ₹150 billion for the fund, which is proposed to be managed by SBI Cap. These funds will be invested in affordable and middle-income projects that are net-worth positive to revive stalled housing projects across the nation.

This step has emerged as a last resort to bail out distressed homebuyers. If implemented in the right manner, it will also boost the Indian economy as the real-estate sector has the largest multiplier impact on the economy, which also benefits other allied sectors dependent on it.

## Projects aided from the special window

The housing projects that can avail the benefits of the fund will have to come under certain criteria set up by the government, which are as follows:

- Projects that are registered under the Real Estate (Regulation and Regulation) Act (RERA).
- Projects stalled for lack of adequate funds.
- Project that are net-worth positive, ie, where the value of receivables plus the value of

the unsold inventory are greater than the completion cost and outstanding liabilities of the project.

- Projects that fall in the affordable or middle-income category; ie, which do not exceed a RERA carpet area of 200 sq m and where the units cost up to or less than ₹20 million in the Mumbai region; up to or less than ₹15 million in NCR, Chennai, Kolkata, Pune, Hyderabad, Bengaluru and Ahmedabad; and up to or less than ₹10 million in the rest of India.

Although the government has restricted the funding to the affordable or middle-income category at present, experts in the construction industry believe that, with this boost, the real-estate sector in totality will witness an indirect collateral benefit, including the projects that cater to luxury housing.

This funding by the government can also be availed by housing projects that are undergoing the corporate insolvency resolution process before the National Company Law Tribunal (NCLT), where the resolution plan for such a process has either not been approved or rejected by the committee of creditors. In fact, we understand that the mega housing projects being constructed by Jaypee and Amrapali Group, at this stage, though not under the bail out package of the government, have petitioned to the government for a bail out under this scheme through the Special Window. One will have to wait and watch for this inclusion in the scheme.

## The mechanism

The AIF fund will have an investment manager who will select the housing project for funding after carrying out due diligence, where preference will be given to housing

projects that are stalled for lack of adequate funds though net-worth positive (including NPAs and projects undergoing NCLT proceedings) and projects close to completion.

After selection of the project, the investment manager will make a detailed investment review with the help of external agencies. This mechanism will be part of the contractual arrangement with the developers as part of funding and approval of the fund investment.

## In conclusion

With this new development, the AIF fund will be dedicated to complete stalled housing projects wherein the criteria laid down by the government will be stringently followed. Through this mechanism, we foresee that the real-estate developers, by availing the monetary support provided by the government, will be able to revive their stalled projects and complete construction and the homebuyers who have been long awaiting their dream homes will finally get possession.

A marginal drop in applications filed against real-estate developers before the Real Estate Regulatory Authority and NCLT can be expected, which will eventually relieve the authorities who are already burdened with cases filed by the homebuyers against real-estate developers.



**About the authors:**  
Aradhana Bhansali, Partner, Rajani Associates, carries with her an experience of more than 15 years and handles mostly the real estate and trusts-related practice of the firm.



Manasi Padwalkar, Associate, Rajani Associates, is part of the firm's Real Estate, Succession and Trust Team.

# CW PROJECT UPDATE

## NATIONAL



### Government to invest ₹100 tn on greenfield, brownfield projects

The Centre has launched a series of infrastructure projects with the aim of enhancing investment in the sector by ₹100 tn over the next five years. India's worrisome economic performance has urged the government to set up investments in greenfield and brownfield projects.

**Contact:** Dr Chandra Shekhar Kumar, Joint Secretary, Government of India.  
**Address:** Rashtrapati Bhawan, New Delhi-110 004.  
**Tel:** 011-2301 1964, 2301 3662.  
**E-mail:** cabinet@nic.in  
**Website:** cabsec.nic.in



### Coal India to add over 400 MT production capacity over five years



Coal India is planning to add fresh production capacity of over 400 mn tonne over five years. This includes 92 mt per annum capacity from 55 greenfield projects and an additional 310 mt per annum that will come from the expansion of 193 existing brownfield projects.

**Contact:** Reena Sinha Puri, Joint Secretary & Financial Adviser, Coal India.  
**Address:** Coal Bhawan Premise No-04 MAR, Plot No-AF-III, Action Area-1A, Newtown, Rajarhat, Kolkata-700 156. **Tel:** 033-2324 5555. **Website:** www.coalindia.in



### Revisit tendering system for construction work contracts: FICCI

Industry body FICCI has reportedly urged the government to revisit the tendering system for construction work contracts, claiming that the current least-cost selection method or L1 may not be the most appropriate and suitable method to award a contract.

## ANDHRA PRADESH



### GVMC launches slew of projects

Projects worth ₹13 bn, proposed by the Greater Visakhapatnam Municipal Corporation (GVMC) and Visakhapatnam Metropolitan Region Development Authority (VMRDA), have been inaugurated and the work is set to begin. GVMC will spend ₹2 bn on developing road and drains.

**Contact:** G Srijana, Commissioner, Greater Visakhapatnam Municipal Corporation  
**Address:** Jail Rd, Ram Nagar Visakhapatnam-530 001. **Website:** gvmc.gov.in

## JAMMU & KASHMIR



### Tunnel for Mughal Road

A report for the construction of a tunnel on Mughal Road that connects Kashmir with the Jammu division is underway. The tunnel is aimed at turning the road into an all-weather route.

**Contact:** Keshav Kumar Pathak, Managing Director, NHIDCL.  
**Address:** 3<sup>rd</sup> Floor, PTI Building, 4 Parliament Street, New Delhi-110 001.  
**Tel:** 011-2346 1600.  
**E-mail:** info@nhidcl.com  
**Website:** www.nhidcl.com

## MADHYA PRADESH



### New sub-urbanisation policy

The state government will roll out the 'sub-urbanisation' policy to curb unplanned urban development. It is in the process of coming out with a master plan for Bhopal, Indore and other cities in the state.

**Contact:** SN Misra, Principal Secretary, Government of Madhya Pradesh.  
**Address:** 3<sup>rd</sup> Floor, Vallabh Bhavan-II, Government of Madhya Pradesh, Bhopal-462 004.  
**Tel:** 0755-270 8060.  
**Website:** www.home.mp.gov.in

## QUICK PICKS

- Centre plans to adopt latest technologies and eco-friendly materials for road construction to enhance economic and environment viability of projects.
- Uttar Pradesh Government identifies 25 projects to be implemented on priority ahead of the 2022 state polls.
- Odisha issues notification for the auction of 12 mineral blocks of iron ore, two of manganese and six having reserves of both minerals.
- Ministry of Tourism sanctions 18 projects covering all the North-Eastern states for ₹14.56 bn under the Swadesh Drashan and Prashad schemes.
- Centre to invest ₹1 tn in the infrastructure sector in five years: Nirmala Sitharaman.



## ODISHA

### 27 projects launched to boost growth

Twenty-seven projects have been launched for the next era of industrial growth in Odisha. The value of the projects is estimated to be ₹89.38 bn.

**Contact:** Girish SN, Special Secretary, Government of Odisha.  
**Address:** Government of Odisha, Bhubaneswar-751 001.  
**Tel:** 0674-239 2870.  
**Website:** www.odisha.gov.in

## TAMIL NADU

### India and ADB sign \$206 mn loan for five cities

ADB and the Government of India have signed a \$206 mn loan to develop water supply and sewerage infrastructure in five cities of Tamil Nadu and strengthen capacities of ULBs for improved service delivery.

**Contact:** Dr Chandra Shekhar Kumar, Joint Secretary, Government of India.  
**Address:** Rashtrapati Bhawan, New Delhi-110 004.  
**Tel:** 011-2301 1964, 2301 3662.  
**E-mail:** cabinet@nic.in  
**Website:** cabsec.nic.in

## UTTARAKHAND

### India's first HAM project in the sewerage sector completed

The Sarai 14-MLD sewage treatment plant (STP) is the first STP to be completed under the hybrid annuity mode (HAM)-based public private partnership (PPP) model, involving ₹414 mn. The plant has been completed before its scheduled timeline and was recently inaugurated. After its commissioning, this plant will also be maintained and operated for a period of 15 years by the same developer.

## RAJASTHAN

### Tender for installation of 520 solar pumps

The Public Health Engineering Department (PHED) of Rajasthan has floated tenders for setting up solar-based water pumping systems in the state. The PHED has issued three different tenders for the projects. The scope of work includes designing and installing 520 solar pumping systems in the Kota,

Bharatpur, and Jodhpur. It also mandates the operation and maintenance of the systems for seven years.

**Contact:** Nannu Mal Pahadiya, Joint Secretary, Public Health Engineering Department, Rajasthan.  
**Address:** Jal Bhawan, 2-Civil Lines, Jaipur-302 006. **Tel:** 0141-238 5206.  
**Website:** www.phedwater.rajasthan.gov.in

## TELANGANA

### Barrage to come up at Dummugudem

A multi-purpose barrage will reportedly be constructed at Dummugudem, both for generation of hydro-electricity and storage of Godavari water. Chief Minister K Chandrasekhar Rao has directed the irrigation department officials to make arrangements to lift 3 tmc ft of water from Kaleshwaram to Mid Manair.

**Contact:** Shailendra Kumar Joshi, Chief Secretary, Government of Telangana.  
**Address:** 5<sup>th</sup> Floor, Burgula Rama Krishna Rao Bhavan, NH 44, Hill Fort, Adarsh Nagar, Hyderabad, Telangana-500 063.  
**Tel:** 040-2345 2620.  
**E-mail:** cs@telangana.gov.in  
**Website:** www.telangana.gov.in

## QUICK PICKS

- Andhra Pradesh Cabinet approves a proposal to go ahead with construction of a steel plant in Kadapa.
- Bihar Government to construct a Transport Complex in Phulwarisharif area near Patna airport.
- Sixty-three major development projects in various sectors such as road, power, health, tourism, agriculture, horticulture and skill development underway under the ₹800.68 bn package for Jammu and Kashmir.
- Jharkhand's Pakri Barwadih coal mining project to get Zyfra 'intelligent' solution.
- KIIFB allots ₹9.77 bn for purchasing land from Fertilizers and Chemicals Travancore for setting a petrochemical park project in Kerala.
- Rajasthan approves ₹964.9 mn for implementation of 25 rural drinking water schemes in the first phase under the Jal Jeevan Mission.
- Wienerberger AG announces investments of ₹300 mn in its Kunigal factory in Karnataka.



**Contact:** Gajendra Singh Shekhawat, Minister, Jal Shakti. **Address:** C Wing, 4th Floor, Pandit Deendayal Antyodaya Bhawan, CGO Complex Lodhi Road-110 003. **Tel:** 011-2371 4200.  
**E-mail id:** minister-mowr@nic.in  
**Website:** www.jalshakti-ddws.gov.in

# CEMENT EXPO 2020

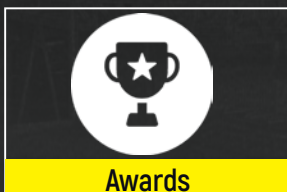
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### FEATURING



### CONTACT

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Tel: +91 22-24193000  
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TO VISIT



## PROJECT UPDATE

### UTTAR PRADESH



#### One City One Operator Contract for sewage works

VA TECH WABAG (WABAG) has signed contracts worth ₹14.77 bn to operate, maintain and manage the sewage treatment and network infrastructure in the cities of Agra and Ghaziabad for a period of 10 years, extendable for an additional period of five years using under the One City, One Operator model.

**Contact:** Rajiv Mittal, Managing Director & Group CEO, VA Tech Wabag.

**Address:** WABAG, House No 17, 200 Feet Thoraipakkam, Pallavaram Main Road Sunnambu, Kolathur, Chennai-600 117.

**Tel:** 044-6123 2323. **E-mail:** wabag@wabag.in

**Website:** www.wabag.com

### WEST BENGAL



#### ₹27.50 bn for state at business meet

The first Bengal Business Conclave in Digha witnessed major accomplishments for the state – with the state bagging investment proposals to the tune of at least ₹27.50 bn, aside from the promise of two luxury hotels that could expedite the progress of the town at a high speed. KfW also inked an MoU with WBSEDCL to set up a 150MW solar power plant in Midnapore for ₹7.50 bn.



### INTERNATIONAL



#### India signs LOCs in water supply, solar projects with Guinea

India recently extended the Line of Credits for one water supply and two solar projects in Guinea. The agreements were exchanged in the presence of External Affairs Minister S Jaishankar and his Guinean counterpart Mamadi Toure. Reportedly, the development of the solar projects reflects Guinea's commitment to the International Solar Alliance.

**Contact:** Manoj Bharti, Additional Secretary, Ministry of External Affairs.

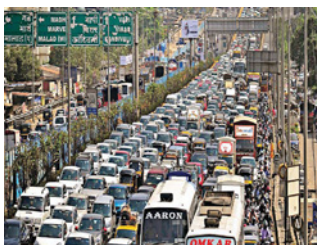
**Address:** South Block, Raisina Hill, New Delhi-110 001.

**Tel:** 011-2301 5461. **E-mail:** asad@mea.gov.in. **Website:** www.mea.gov.in



#### Sweden-India Transport Innovation & Safety (SITIS) platform established

Leading Indian companies and institutes with expertise in safety have come together to form the Sweden-India Transport Innovation & Safety (SITIS) platform as a long-term platform for innovation and a centre for excellence on traffic safety research. The SITIS partnership will build a deeper understanding of traffic safety in India.



#### Ministry of Railways signs MoU with DFID, UK

A MoU has been signed between the Ministry of Railways, Government of India, and Department for International Development, UK, for energy efficiency and energy self sufficiency for the Indian Railways. The effort is to reduce carbon footprint and transform Indian Railways into 'Green Railways'.

**Contact:** PK Sinha, Secretary General, Ministry of Railways.

**Address:** Federation of Railway Officer's Association Office, 256-A, Rail Bhavan, Raisina Road, New Delhi-110 001. **Tel:** 011-2338 9155.

**E-mail:** secyfroa@gmail.com. **Website:** www.indianrailways.gov.in

### QUICK PICKS

- India's Sterling and Wilson Solar begins construction of 200 MW solar project in Australia.
- Coal India in talks with Russian coal company Vostok-Coal-Diskon to participate in the extraction of coking coal and its imports from mines in the Siberian districts of Russia.
- Cabinet approves MoU between India and Japan Coal Energy Centre for cooperation in the field of supply of electricity.
- Union Cabinet approves the signing of the MoC between India and Japan to constitute the India-Japan Steel Dialogue.
- Cabinet approves the Joint Declaration of Intent between India and Germany regarding cooperation on strategic projects in the field of railways.
- India and Bhutan hold the second Annual Development Cooperation dialogue, during which the two sides agree to implement 21 new Project Tied Assistance projects.

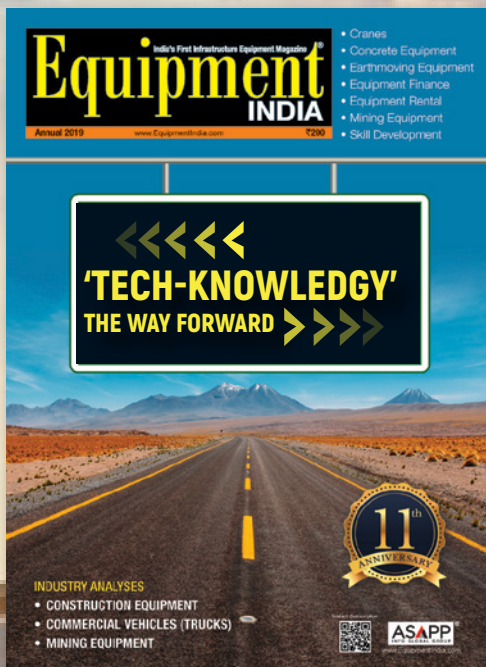


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### Tenders floated for 5 MW of rooftop solar projects in Noida

The New Okhla Industrial Development Authority (Noida) has issued a tender for 5 MW of rooftop solar projects ranging between 500 kW and 5 MW on buildings across the city. Interested bidders must reportedly pay an earnest money deposit (EMD) of ₹4.3 mn to participate. The project is estimated to cost ₹215 mn.



**Contact:** Alok Tandon, Chairman, New Okhla Industrial Development Authority.  
**Address:** Administrative Complex, Sector 6, Noida-201301, District Gautam Budh Nagar, Uttar Pradesh. **Tel:** 0120-242 2239.  
**E-mail:** chairman@noidaauthorityonline.com **Website:** www.noidaauthorityonline.in

### SECI invites tenders for 2.4 GW of wind, solar projects

The Solar Energy Corporation of India (SECI) is inviting tenders for two solicitations seeking to award 1.2 GW of solar photovoltaic and 1.2 GW of wind-solar projects that will be developed on a build-own-operate (BOO) basis. Winners of the bid will be awarded 25-year power purchase agreements with the corporation.

**Contact:** Sunil Kumar Mehlatw, Company Secretary, Solar Energy Corporation of India.  
**Address:** 1<sup>st</sup> Floor, D-3, A Wing, Prius Platinum Building District Centre, Saket, New Delhi-110 017.  
**Tel:** 011-7198 9240.  
**E-mail:** sunil.mehlatw@seci.co.in  
**Website:** www.seci.co.in

### Bids for 20 MW solar projects in Jharkhand

The subsidiary of Coal India – Central Coalfields (CCL), has issued a tender for the development of a 20-MW solar PV power project at the vacant land at Piparwar in the Chatra district of Jharkhand. The last date for bid submission is January 15, and the techno-commercial bids will be opened on January 17.

**Contact:** Deepak Kumar, Manager Public Relations, Central Coalfields (CCL).  
**Address:** Central Coalfields Darbhanga House, Kutchery Road, Ranchi-834 029, Jharkhand.  
**Mobile:** (0) 89877 84206  
**E-mail:** gmpr.ccl@coalindia.in  
**Website:** www.centralcoalfields.in

### BHEL seeks 231,200 quantities of minimum 330 W solar modules

Bharat Heavy Electricals (BHEL) has invited bids for the manufacturing and supply of multi crystalline PV modules with peak power output of minimum 330 W. A total of 231,200 quantities have to be delivered by February 10 for BHEL's 100 MW project at Raghanesda Solar Park and the 75 MW project (Phase-II) at Dhuvaran Gas Based Power Station in Gujarat.

**Contact:** Amit Varadan, Joint Secretary, Bharat Heavy Electricals.  
**Address:** BHEL House, Siri Fort, New Delhi-110 049.  
**Tel:** 011-6633 7000.  
**E-mail:** psm@bhel.in **Website:** www.bhel.com

### BHEL tenders BOS for 100 MW plant in Gujarat

BHEL's Electronics Division, Bengaluru, is setting up a 100 MW (AC) solar power plant for Raghanesda Ultra Mega Solar Park in Gujarat and has issued a balance of systems (BOS) for various supply and installation works. The plant comprises 18 inverter stations with associated 5 MW PV array and two pooling stations of 50 MW each.

**Contact:** K Satheesan, GM-SC & PV, BHEL-ED. **Address:** BHEL-ED PB No 2606, Mysuru Road, Bengaluru-560 026.  
**Tel:** 080-2699 8500.  
**Website:** www.edn.bhel.com

## QUICK PICKS

- MERC approves the petition filed by Tata Power Company – Distribution to procure 150 MW of solar power at a tariff rate of ₹2.83 per kWh for a duration of 25-years.
- India can generate around 18,000 MW of renewable energy using biomass and an additional 7,000-8,000 MW from bagasse cogeneration in sugar mills.
- Irbumbai in Villupuram becomes the country's first fully solar-powered village.
- MNRE issues bids for 15,100 MW of wind power projects, while projects with a cumulative capacity of 12,162.50 MW have already been awarded.
- An estimated \$24.7 tn investment potential in green buildings by 2030: IFC report.
- SECI to invite proposals for setting up of 1.2 GW of ISTS-connected solar projects and another 1.2 GW of ISTS-connected wind-solar hybrid power projects in India.

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## TO KNOW MORE CONTACT:

Tanveer Padode | Manager - Operations | Tel: 022 24175738 | Mob: +91 9324579821 | Email: [Tanveer.Padode@India.SmartCitiesCouncil.com](mailto:Tanveer.Padode@India.SmartCitiesCouncil.com)





## O&M tender issued for two solar parks in Andhra Pradesh

The Andhra Pradesh Solar Power Corporation (APSPCL) has issued operation and maintenance (O&M) tenders for two of the state's ultra-mega solar parks – 1.5 GW of solar projects at Ananthapuram and 1 GW of projects at Kurnool ultra-mega solar park. The Ananthapuramu Solar Park falls in

the Ananthapur district while the Kurnool park is located at Gani and Sakunala villages of the state.

**Contact:** B Sreedhar, Chairman, Andhra Pradesh Solar Power Corporation.  
**Address:** 3<sup>rd</sup> Floor, Vidyut Soudha, Gunadala, Vijayawada-520 004, Krishna District, Andhra Pradesh.  
**Tel:** 08645-274 040.  
**Website:** www.apspl.ap.gov.in



## NTPC floats 500 MW solar EPC tender in Maharashtra



National Thermal Power Corporation (NTPC) has invited bids for 500 MW of grid-connected solar projects under engineering, procurement and construction package in Maharashtra.

The projects under this tender can range anywhere between 100 MW and 500 MW, and have been floated under the open category of solar cells and modules.

**Contact:** Vivek Kumar Dewangan, Joint Secretary, NTPC.  
**Address:** NTPC Bhawan, SCOPE Complex, Institutional Area, Lodhi Road, New Delhi-110 003.  
**Tel:** 011-2436 0100.  
**E-mail:** info@ntpc.co.in  
**Website:** www.ntpc.co.in

## QUICK PICKS

- NTPC invites bids for purchase of power from existing solar power projects of a cumulative capacity up to 100 MW.
- Jakson commissions a 27-MW solar power plant in Koppal, Karnataka.
- LONGi Solar signs a framework sales agreement with Adani Green Energy to supply up to 1,200 MW of its high-performance p-Type monocrystalline modules.
- Coimbatore civic opens its second solar power plant in Kavundampalayam of 1 MW capacity.
- ReNew Power announces a JV partnership with South Korea-based GS E&C for execution of its 300 MW solar power plant in Rajasthan.
- Solar rooftop firm ZunRoof, launches its operations in Gujarat.



## 400 kV transmission line for Chamba

Himachal Pradesh Power Transmission Corporation (HPTCL) will install a 400 kV transmission line from Lahal power substation to Rajera substation at Chamba. The owners of the land will reportedly be compensated for the given area, and in case of any damage caused to the property while erecting the towers, the liability will reportedly be paid by HPTCL.

**Contact:** RK Sharma, Managing Director, Himachal Pradesh Power Transmission Corporation.  
**Address:** Himfed Bhawan, New ISBT Road, Panjari Shimla-171 005.  
**Tel:** 0177-263 3283.  
**E-mail:** md@hptcl.in  
**Website:** www.hptcl.com



## New scheme to revive 24,000-MW gas power plants on the map

The government is reportedly working on a scheme to salvage 24,000 MW of stressed gas-based power plants, built at an investment of over ₹1 tn, by importing natural gas and bundling the output with cheaper solar energy. The new proposal is being drawn up by the ministries of power and petroleum.

**Contact:** Ashish Upadhyaya, Additional Secretary & Financial Advisor, Ministry of Power.  
**Address:** Ministry of Power, Room No. 204, 2<sup>nd</sup> Floor, Shram Shakti Bhawan, Rafi Marg, New Delhi-110 001.  
**Tel:** 011-2371 4009.  
**E-mail:** secy-power@nic.in  
**Website:** www.powermin.nic.in



## SB Energy to invest ₹300 bn in renewable energy in Gujarat

SB Energy, a sister company of Japan's Soft Bank, has announced that it will invest ₹300 bn in the renewable energy sector in Gujarat. The investment will be directed towards solar energy, wind energy and other unconventional renewable energy sources, which will ramp up the state's current installed capacity of renewable energy.

**Contact:** VA Vaghela, Additional Secretary, Government of Gujarat-Energy & Petrochemicals Department.  
**Address:** Block No. 5, 5<sup>th</sup> Floor, Sachivalaya, Gandhinagar.  
**Tel:** 079-2325 0773.  
**E-mail:** as-petro-epd@gujarat.gov.in  
**Website:** www.guj-epd.gujarat.gov.in

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## AIRPORTS



### Major capacity expansion at Kolkata Airport

The Kolkata Airport is undertaking a major capacity expansion with an investment of nearly ₹3.50 bn to add 40 parking bays and extend a taxi track over the next five years. Work on extending the taxi track and the first batch of 10 parking bays has already begun. Prior to this, the work order for 20 more runways worth ₹1 bn will be awarded.

**Contact:** Atul Dikshit, Airport Director, Netaji Subhas Chandra Bose International Airport.

**Address:** Airports Authority of India, NSCBI Airport, Jessore Rd Dum Dum, Kolkata, West Bengal-700 052.

**Tel:** 033-2569 1002.

**E-mail id:** apdkolkata@aai.aero

**Website:** www.aai.aero



### Kolhapur Airport to undergo expansion

The Kolhapur Airport is being expanded with the construction of a new domestic terminal building and extension of the runway with a blast pad to make it suitable for operation of bigger A-320 type of aircraft – the work will be undertaken by AAI.

**Contact:** KP Kailas Nadh, General Manager, Airports Authority of India

**Address:** Rajiv Gandhi Bhawan, Safdarjung Airport, New Delhi-110 003.

**Tel:** 011-2463 2950.

**E-mail id:** nadh@aai.aero

**Website:** www.aai.aero



### Six more airports to come up in Telangana

The Centre has started the process to set up six more airports in Telangana, which so far has just one operational airport in Hyderabad. An aeronautical survey has been marked for the proposed development of these six airports by AAI.

**Contact:** KP Kailas Nadh, General Manager, Airports Authority of India

**Address:** Rajiv Gandhi Bhawan, Safdarjung Airport, New Delhi-110 003.

**Tel:** 011-2463 2950.

**E-mail id:** nadh@aai.aero

**Website:** www.aai.aero



### UDAN 4.0: 30 NorthEast airports and airstrips to come up

Under the UDAN or regional air connectivity scheme, bids have reportedly been sought for six underserved and 24 unserved airports and airstrips in the NorthEast region. The underserved airports and airstrips in the list are at Passighat and Tezu (Arunachal Pradesh), Jorhat, Rupsi and Tezpur (Assam), and Shillong (Meghalaya).

**Contact:** Ajay Yadav, Deputy Secretary, Ministry of Civil Aviation.

**Address:** Rajiv Gandhi Bhawan 110003, Block B, Safdarjung Airport Area, New Delhi. Tel: 011-24632950

**E-mail:** a.yadav@ias.nic.in

**Website:** www.civilaviation.gov.in



### Six airports to be leased out under PPP mode

The Airports Authority of India (AAI) is expected to lease out six more airports, including the Biju Patnaik International Airport under the public private partnership (PPP) model. The AAI had recommended leasing out BPIA, Amritsar, Varanasi, Indore, Raipur and Tiruchirappalli airports for operation, management and development under PPP.

**Contact:** KP Kailas Nadh, General Manager, Airports Authority of India.

**Address:** Rajiv Gandhi Bhawan, Safdarjung Airport, New Delhi-110 003.

**Tel:** 011-2463 2950. **E-mail:** nadh@AAI.AERO

**Website:** www.aai.aero

## QUICK PICKS

- Uttar Pradesh Cabinet approves proposal to award the contract for construction and operation of the Noida International Greenfield Airport in Jewar to Switzerland's Zurich Airport International.
- Ministry of Civil Aviation offers bids for 11 unserved airports in Jammu and Kashmir and two underserved airports in Ladakh region under UDAN 4.0.
- Vikram Solar commissions three new solar plants for AAI, in Dibrugarh, Gaya, and Gondia.
- Phase-1 of Chennai International Airport expansion to soon be completed, after which construction of Terminal-2 will commence.
- Kempe Gowda International Airport in Bengaluru commences operations on the new South Runway with take-off of the first flight on the 4-km-long and 45-m-wide airstrip.
- Terminal-3 of Indira Gandhi International Airport to get an elevated cross taxiway by June 2022.

## PORTS



### ₹130 bn sanctioned for upgradation of major ports



Projects worth ₹130 bn have been reportedly awarded for the upgradation of major ports over the past three years. Minister of State for Shipping and Chemicals & Fertilizers, Mansukh Mandaviya reportedly stated that in FY2016-17, ₹84.84 bn was sanctioned for 54 such projects. In 2017-18, ₹26.59 bn for 25 projects and in 2018-19 ₹21.64 bn for another 25 projects was sanctioned, respectively.

**Contact:** Gopal Krishna, Secretary, Ministry of Shipping.

**Address:** Transport Bhawan, Sansad Marg, New Delhi-110 001.

**Tel:** 011-2371 4938. **E-mail id:** secyship@nic.in. **Website:** www.shipmin.gov.in



### Work on Machilipatnam Port to begin early this year

Andhra Pradesh Transport Minister Perni Venkataramaiah has reportedly stated that the state government is planning to begin construction work on the Machilipatnam Port project in Krishna district early this year. It is estimated that various banks are likely to grant loan to the tune of ₹30-40 bn for the project.

**Contact:** P Sitaramanjaneyulu, Transport Commissioner, Government of Andhra Pradesh-Transport Department.

**Tel:** 0866-257 2400.

**E-mail:** tc@aptransport.org

**Website:** www.aptransport.org



### Construction of Wadhavan port to start this year

The government is reportedly planning to develop an all-weather port at Wadhavan, 140 km north to Mumbai. Construction of the port is expected to begin this year, and will have nine berths for large container ships. The move comes at a time when the government has stated its goal to make India one of the top ten global container port hubs.

**Contact:** Gopal Krishna, Secretary, Ministry of Shipping.

**Address:** Transport Bhawan, Sansad Marg, New Delhi-110 001.

**Tel:** 011-23714938

**Website:** www.shipmin.gov.in



### JSW commissions iron ore terminal at Paradip Port

JSW Group has commissioned a 18 mn tonne per year iron ore terminal at state-owned Paradip Port in Odisha, one of India's busiest iron ore export port responsible for shipping iron ore fines and pellet from mines in Odisha and Chhattisgarh. The port will have a loading rate of 100,000 tonne per day day.

**Contact:** Sajjan Jindal, Chairman, JSW Group. **Address:** JSW, Bandra Kurla Complex, Mumbai, Maharashtra-400 051.

**Tel:** 022-4286 1000.

**Website:** www.jsw.in



### Centre to fund upcoming ports in Andhra Pradesh

In a meeting held by Andhra Pradesh Chief Minister YS Jaganmohan Reddy, proposals for construction of existing ports and new ports in the state were reviewed. He reportedly directed officials to make plans for the construction of the Duggajarajapatnam, Ramayapatnam, Machilipatnam, Nakkapalli, Kalingapatnam and Bhavipanpadu ports.

**Contact:** Ashok Kumar Sarangi, Chief Secretary, Government of Andhra Pradesh.

**Address:** 1<sup>st</sup> Block, 1<sup>st</sup> Floor, Interim Government Complex, AP Secretariat Office, Velagapudi.

**Website:** www.ap.gov.in



### Soon, trial run of Indian ships using Bangladeshi port

The first trial run for Indian ships using Bangladeshi ports is expected to begin soon. This move is likely to boost the connectivity between the two nations, which will in turn give way to greater economic opportunities, strengthen infrastructure and boost business. A container cargo is estimated to operate either through Chittagong Port or Mongla Port to the Indian state of Tripura.

**Contact:** Gopal Krishna, Secretary, Ministry of Shipping.

**Address:** Transport Bhawan, Sansad Marg, New Delhi-110 001.

**Tel:** 011-2371 4938.



### Odisha takes steps to push Subarnarekha Port

The Odisha Government has directed various agencies to expedite the development and construction of the Subarnarekha port project by ensuring the land acquisition process for development of the access road and rail corridor to the port is undertaken at the earliest.

**Contact:** Ashok Kumar Sarangi, Deputy Secretary, Government of Odisha -Transport Department.

**Address:** Transport Department, Odisha Secretariat, Bhubaneswar GPO-751 001, Odisha.

**Tel:** 0674-232 2202.

**Website:** www.rti.odisha.in



## RAILWAYS



### Indian Railways to invest ₹10 tn on projects



The Indian Railways will reportedly be investing over ₹10 tn in the next five years on various projects. These include doubling or multiplying tracks to decongest saturated network – of which work for 14,000 km is in progress and is targeted to be completed by March 2024.

**Contact:** Rakesh Rawat, Joint Secretary, Ministry of Railways.

**Address:** Ministry of Railways, Rail Bhavan, New Delhi-110 001.

**Tel:** 011-2338 1130.

**E-mail:** dsports@rb.railnet.gov.in

**Website:** www.indianrailways.gov.in



### MDDA signs MoU to renovate Doon railway station

An MoU has been signed by the Mussoorie and Dehradun Development Authority and the Railway Land Development Authority to renovate the Dehradun Railway Station. As per the MoU, 14 new features will be added to the railway station, including a hotel, commercial space, parking, and an under-pass and pedestrian plaza, among others.

**Contact:** Minakshi Patwal, Joint Secretary, Mussoorie Dehradun Development Authority.

**Address:** Transport Nagar, Saharanpur road, Near ISBT, Dehradun-248 001, Uttarakhand.

**Tel:** 0135-660 3100.

**E-mail:** info@mddaonline.in

**Website:** www.mddaonline.in



### ₹24.10 bn for Tamil Nadu railway projects in 2019-20

More than ₹24.10 bn has been reportedly allotted towards railway infrastructure projects and safety works in 2019-2020 for Tamil Nadu. In total, 27 different projects worth ₹188.55 bn are in different stages of planning, sanction and execution now in the state. This includes nine new line projects (871 km), eight doubling projects (592 km) and 10 electrification projects (1633 km).

**Contact:** Rakesh Rawat, Joint Secretary, Ministry of Railways.

**Address:** Ministry of Railways, Rail Bhavan, New Delhi-110 001.

**Tel:** 011-2338 1130.

**Website:** www.indianrailways.gov.in



### Proposal for new station at Basai on the map

A new station near Basai crossing, close to Dwarka Expressway junction, has been proposed in Sector 101 at Gurugram. At present, the city has only one major station that connects to other cities. The proposal by the Haryana Rail Infrastructure Development Corporation (HRIDC) came up at a meeting with officials of GMDA.

**Contact:** Keshni Anand Arora, Chief Secretary, HRIDC.

**Address:** SCO 17-18-19, Near Jagat Cinema, Sector-17A, Chandigarh.

**Tel:** 0172-271 5644.

**Website:** www.hridc.co.in



### Proposal for four new bullet trains

Indian Railways has proposed four more bullet train services on some of the busiest routes in the country even though the progress for the Mumbai-Ahmedabad project has been relatively muted. The ministry of railways is exploring the possibility of running bullet trains on key routes, including Delhi-Mumbai, Delhi-Kolkata, Mumbai-Chennai, and Mumbai-Nagpur.

**Contact:** Rakesh Rawat, Joint Secretary, Ministry of Railways.

**Address:** Ministry of Railways, Rail Bhavan, New Delhi-110 001.

**Tel:** 011-2338 1130. **E-mail:** dsports@rb.railnet.gov.in

**Website:** www.indianrailways.gov.in

## QUICK PICKS

- East Central Railway completes track electrification work on 790 km stretch in 19 months under the jurisdiction of its five divisions – Danapur, Mughalsarai, Dhanbad, Sonapur and Samastipur.
- Twenty projects costing ₹732.14 bn under different stages of planning, approval or execution for development of rail infrastructure in Assam and North Eastern Region.
- South Central Railway to develop its vacant lands in Nellore for commercial purposes; with this, Nellore station will set up a high-tech hospital.
- Chhayapuri railway station in Vadodara inaugurated.
- Government to invite investments of ₹225 bn in rolling stock as part of its plan to lease out at least 100 train routes to private players to run 150 passenger trains.
- About 36 rail projects worth ₹499.84 bn under different stages of planning, approval or execution in Odisha.

## ROADWAYS



### ₹16 bn Ballia Link Expressway project cleared

The Uttar Pradesh cabinet has cleared the decks for the proposed Ballia Link Expressway project, estimated at ₹16 bn. The project would link Ballia district on the Uttar Pradesh-Bihar border with the under-construction Purvanchal Expressway, which is aimed at connecting the backward eastern Uttar Pradesh region with its central at Lucknow.

**Contact:** SP Goyal, Principal Secretary, Government of Uttar Pradesh.

**Address:** Suchna Bhawan, Park Road, Department of Information & Public Relations, Lucknow-226 001.

**Tel:** 0522-223 8219.

**Website:** www.up.gov.in



### Nod for 22 green express highways, worth ₹1.5 tn in Karnataka



The Road Transport and Highways Ministry has approved 22 green express highways in Karnataka worth ₹1.5 tn. This includes a new alignment of the Pune-Bengaluru Express Highway, which will be completed in the next few years at ₹500 bn.

**Contact:** Abhay Damle, Joint Secretary, Ministry of Road Transport and Highways.

**Address:** Transport Bhawan 1, Parliament Street New Delhi-110 001.

**Tel:** 011-2373 9027.

**E-mail:** abhay.damle@gov.in

**Website:** www.nic.in



### Foundation laid for Assam's longest flyover

Assam's Chief Minister Sarbananda Sonowal recently laid the foundation stone of the 1,400-m-long T-shaped double-lane flyover on the Guwahati-Shillong Road connecting Dispur to Khanapara and Supermarket to Last Gate in Guwahati. The total project cost of the longest flyover in the city is ₹1.27 bn and is scheduled to be completed within 36 months. It will start from Janata Bhawan at Dispur, while the right-side bifurcation will start from the Dispur Supermarket junction.



### Private contractors to maintain GHMC roads

Around 687 km of high-density main roads in Hyderabad, identified by the Greater Hyderabad Municipal Corporation under the Annual Maintenance Contract system, will be handed over to private parties for operations and maintenance for five years.

**Contact:** Lokesh Kumar DS, Commissioner, Greater Hyderabad Municipal Corporation.

**Address:** CC Complex Tank Bund Road, Lower Tank Bund Hyderabad-500 063.

**Tel:** 040-2322 5397.

**E-mail:** commissioner-ghmc@gov.in

**Website:** www.ghmc.gov.in



### Projects worth ₹500 bn underway to decongest Delhi roads

The Centre is working on road projects worth ₹500 bn to decongest the national capital and these will reportedly also help reduce pollution in the city. While more spots are being identified for decongestion, work is on for the Dwarka Expressway as well as on a dedicated road to connect Delhi airport from Dhaula Kuan.

**Contact:** Dr Chandra Shekhar Kumar, Joint Secretary, Union Ministry.

**Address:** Rashtrapati Bhawan, New Delhi-110 004.

**Tel:** 011-2301 1964, 2301 3662.

**E-mail:** cabinet@nic.in

**Website:** cabsec.nic.in

## QUICK PICKS

- Bangladesh plans to open direct road network with India with trials runs on the Dhaka-Darjeeling and Dhaka-Sikkim routes.
- Char Dham all-weather road project to be completed only by 2022 instead of its earlier deadline of 2020.
- Jammu and Kashmir LT Governor inaugurates 72-m all weather bridge in Rajouri that spans over Draj nallah and connects Draj to Tehsil Kotranka.
- NHAI gives its consent for the construction of an underpass near Kambohpora village on the NH-44.
- NHAI sanctions an additional sum of ₹130 mn for the Ludhiana-Talwandi Bhai four-lane national highway.
- Kashi Vishwanath Corridor project to be completed by April 2021.
- A total of 255 road projects with aggregate length of 10,699 km approved under the Bharatmala Pariyojana.
- Kerala's highest 120-m-long bridge, built across Vavadukkam river, to now be developed into a tourist destination.





### Century Real Estate unveils Century Horizon



Century Real Estate Holdings has unveiled its much-anticipated project, Century Horizon in North Bengaluru. The project features a lavish 10,000 sq ft clubhouse and has a wide range of amenities such as a temperature controlled indoor

swimming pool, steam room and indoor games room.

**Contact:** Ravindra Pai, Managing Director, Century Real Estate Holdings.  
**Address:** No. 3/1 Fourth Floor, JP Techno Park, Millers Road, Bengaluru-560 052.  
**Tel:** 080-4433 4400.  
**Website:** www.centuryrealestate.in



### GFM to invest ₹7 bn in Century Group's commercial project

Real estate PE arm of the Godrej Group, Godrej Fund Management has entered into a strategic partnership with Bengaluru's Centruy Group to develop a commercial asset in a deal estimated to be around ₹7 bn. The investment will be directed towards a commercial project in north Bengaluru, which has a development potential of 2-3 mn sq ft and is spread over 10 acre.

**Contact:** Girish Singhi, Principal, Godrej Fund Management.  
**Address:** Godrej One, 5<sup>th</sup> Floor, Pirojshanagar, Eastern Express Highway, Vikhroli (East), Mumbai-400 079.  
**Tel:** 022-6169 8500.  
**Website:** www.godrejproperties.com



### Gaurs Group to invest ₹7.50 bn in Greater Noida project

Gaurs Group is set to invest ₹7.50 bn over the next three years to develop a commercial project in Greater Noida. The company will develop 1.2 mn sq ft area in the project – Gaur World Street – which will be a mixed-use commercial project comprising office and retail space as well as with provisions for hospitality.

**Contact:** Manoj Gaur, Managing Director, Gaurs Group.  
**Address:** Gaur Biz Park, Plot No-1, Abhay Khand II, Indirapuram, Ghaziabad-201 014.  
**Tel:** 0120-434 3333.  
**Website:** www.gaursonsindia.com



### Ekta World unveils Regent Park at Ekta ParksVille

Ekta World has launched the new phase of Regent Park at Ekta ParksVille in Virar, Maharashtra. Regent Park offers one, two and three-BHK apartments. It offers various amenities that include a swimming pool, lounge, gymnasium, jogging track, indoor games, and a children's play area,

among other facilities.

**Contact:** Ramesh KV, Chief Sales & Marketing Officer, Ekta World.  
**Address:** 401, Hallmark Business Plaza, Off Western Express Highway, Near Bandra Kurla complex, Kalanagar, Bandra (East), Mumbai-400051  
**Tel:** 022-6115 2424.  
**E-mail:** info@ektaworld.com  
**Website:** www.ektaworld.com



### Hines to invest US\$ 500 mn on Indian projects

Hines, the US-based global real estate investment firm, plans to invest US\$ 500 mn in India to develop new commercial and housing projects. The company foresees excellent growth opportunities in the country despite the current slowdown in the real estate sector. Hines has branched out in 219 cities in around 23 countries and is keen on marking Asia and India as its focus markets.

**Contact:** Divya Pall, Head-Marketing & Communication, Hines India Real Estates.  
**Address:** One Horizon Center, 12<sup>th</sup> Floor Gurugram, Haryana-122 002.  
**Tel:** 0124-480 2222.  
**E-mail:** divya.pall@hines.com  
**Website:** www.hines.com

## QUICK PICKS

- MahaRERA orders auction of two commercial units of SSV Developers at Amar Mahal in Ghatkopar with a reserve price of ₹15 mn.
- Puravankara enters the uber luxury real estate segment under the Purva World Home collection brand, targeted at a niche demographic of home buyers.
- JSW Group partners with Suraksha Realty to provide financial, technical and strategic support in order to complete stalled Jaypee projects.
- Sobha to enter new property markets, launch projects in Delhi, Hyderabad and Thiruvananthapuram as it aims to expand operations.



## Keppel Land, Rustomjee Group to develop integrated township at Thane

Keppel Land, through its wholly-owned subsidiary, has entered into a JV with Rustomjee Group to jointly develop the 51.4-hectare Urbania integrated township in Thane. Keppel Land will be acquiring a 49 per cent stake in the JV company, Kapstone Constructions, at a consideration of about ₹4,091 mn.

**Contact:** Shekhar Lele, Head-Marketing, Rustomjee Group.

**Address:** 702 Natraj, MV Road Junction, Western Express Highway,



Andheri (East) Mumbai-400 069, Maharashtra.

**Tel:** 022-6676 6888.

**E-mail:** shekharlele@rustomjee.com

**Website:** www.rustomjee.com



## Puravankara launches Purva Aspire in Pune

Puravankara has announced its further expansion plans in Pune with the launch of its luxury project – Purva Aspire in Bavdhan. The project is a joint development between the company and a Pune-based developer. Prior to this, in 2016, Puravankara launched Silversands (Phase-1), in Pune and will soon launch Phase-2 of the project.

**Contact:** Avinash Rao, Senior Vice President & Business Head, Puravankara.

**Address:** #130/1, Ulsoor Road, Bengaluru, Karnataka-560 042.

**Tel:** 080-2559 9000.

**Website:** www.puravankara.com



## Piramal Realty acquires 2.2 mn sq ft in Mumbai

Piramal Realty has announced its second Joint Development Agreement with Omkar for a residential project in Mahim, Mumbai. The company intends to develop 2.2 mn sq ft over 4 acre and plans to invest ₹30 bn over the next few years.

**Contact:** Natasha Malani, Senior Manager-Marketing, Piramal Realty.

**Address:** Piramal Realty, 8th floor, Piramal Tower, Ganpatrao Kadam Marg, Lower Parel (West), Mumbai-400 013.

**Tel:** 022-6216 6216.

**E-mail:** sales.prpl@piramal.com

**Website:** www.piramalrealty.com

## QUICK PICKS

- Piramal Group partners with IIFL Wealth Management to launch a ₹20-bn alternative investment fund to provide last-mile funding to real estate developers.
- Indian real estate attracts nearly \$14 bn of foreign PE between 2015 and Q3 2019: Anarock.
- SaffronStays launches its 120<sup>th</sup> home in Maharashtra – Saffron Stays Nisarga, in Indapur.
- India's top office submarkets across Delhi, Gurugram, Mumbai and Bengaluru find place in JLL's Global Premium Office Rent Tracker.
- Virtuous Retail South Asia, a JV between PE fund Xander and Dutch pension fund APG, buys malls from Tata Realty & Infrastructure ₹7 bn.
- Brookfield Asset Management reportedly planning a \$1-bn REIT listing in India.



## Marriott, Prestige Group to open six hotels

Marriott has signed agreements with the Prestige Group to open six new hotels across India. The six hotels – The W Bengaluru, Tribute Portfolio Resort Bengaluru, Tribute Portfolio Hotel Kochi Maradu, JW Marriott Bengaluru Prestige Golfshire Resort & Spa, Moxy Chennai and Moxy Bengaluru – are expected to open between 2021 and 2025.

**Contact:** Venkat K Narayan, CEO, Prestige Group.

**Address:** Prestige Falcon Towers, 19, Brunton Rd, Craig Park Layout, Ashok Nagar, Bengaluru, Karnataka-560 025.

**Tel:** 080-2559 1080.

**Website:** www.prestigeconstructions.com



## Godrej Properties adds four new projects

Godrej Properties has added three new projects in Mumbai and one in Bengaluru – adding around 12.70 mn sq ft of new development potential. It has entered into a JV to develop a township project in Navi Mumbai. The second project is a JV with Nisarg Nirman Developers; the third is an outright purchase of land in Thane; and the fourth project is a JV with the promoters of Universal Builders.

**Contact:** Lalit Makhijani, CMO, Godrej Properties.

**Address:** Unit No. 5C, 5<sup>th</sup> Floor, Godrej One, Piroshanagar, Vikhroli East, Mumbai-400 079. **Tel:** 022-6169 8500.

**Website:** www.godrejproperties.com



## SMART CITIES UPDATE



### Tech Mahindra bags ₹5 bn project for Pimpri Chinchwad



Tech Mahindra has announced its largest smart city project worth ₹5 bn from the Pimpri Chinchwad Municipal Corporation (PCMC), known to be Asia's richest municipal corporation. Through this project, Tech Mahindra will engage with more than 1.5 mn citizens of PCMC by enabling technology-led transformation to

convert it into a smart and sustainable city.

**Contact:** Nikhil Kulkarni, Indian Head-Marketing, Tech Mahindra.

**Address:** Plot No. 45-47, KIADB Industrial Area Phase-II, Electronic City, Bengaluru-560 100, Karnataka.

**Tel:** 080-6780 7777.

**E-mail:** nk0042384@techmahindra.com

**Website:** www.techmahindra.com



### Tenders issued for 1.3 MW of rooftop solar systems

The Smart Kalyan Dombivli Development Corporation has issued a RFP for 1.3 MW of grid-connected rooftop solar systems. The solar systems will be installed on the buildings owned by the Kalyan Dombivli Municipal Corporation under the RESCO model.

**Contact:** Govind Bodke, CEO, Smart Kalyan Dombivli Development Corporation.

**Address:** SKDCL, 2<sup>nd</sup> Floor, Admin Building, Shivaji Chowk, Kalyan (W), Thane-421301, Maharashtra.

**Tel:** 0251-220 4065.

**Website:** www.kdmc.gov.in



### Mangaluru's drinking water to be rehabilitated

French firm Suez has won the ₹5.65 bn contract for the extension, rehabilitation and operation of the drinking water distribution system of the entire city of Mangaluru. This 11.5-year contract is to ensure a 24 x 7 water supply for the city's 550,000 inhabitants.

**Contact:** Shyam Jee Bhan, Managing Director, Suez India.

**Address:** Unitech Business Park, Tower A, 2<sup>nd</sup> Floor, South City 1, Gurugram-122 001, Haryana.

**Tel:** 0124-468 0100.

**Website:** www.suez.com



### LMC floats tenders for multi-level car parking construction

The Ludhiana Municipal Corporation (LMC) has floated tenders for the construction of a much-awaited multi-level parking at Feroze Gandhi market in the city. Out of five, two parking lots will be used for the construction of the multi-level parking system under the Smart City Mission, whereas the other three might be handed over to contractors.

**Contact:** Sanyam Aggarwal, Additional Commissioner, Ludhiana Municipal Corporation.

**Address:** Mata Rani Chowk, Ludhiana, Punjab.

**Tel:** 0161-274 8411.

**Website:** www.main.mcludhiana.gov.in



### Sweden to help India build climate neutral smart city

Swedish companies will help to build India's first climate neutral city in Gurugram – after city-based developer M3M signed an agreement with a Swedish company recently. The agreement is to develop a 165 acre smart city project that is expected to attract foreign investments of around \$2 bn.

**Contact:** Basant Bansal, Chairman, M3M India.

**Address:** 6<sup>th</sup> Floor, 'M3M Tee Point', Sector 65, Gurugram Manesar Urban Complex, Gurugram-122 101, Haryana.

**Tel:** 0124-473 2000.

**Website:** www.m3mindia.com

## QUICK PICKS

- Assam Government receives ₹1.96 bn for the Guwahati Smart City project from the Centre and releases ₹1.91 bn for it.
- Work on renovation of Adalatganj Talab by Patna Smart City resumes.
- Smart signalling system eases traffic chaos at Allahabad's 38 prominent crossings and inter-sections.
- Kohima Wi-Fi City Phase-1 launched at the e-Naga Summit held at RCMPA.
- Bhopal's public bike sharing project goes electric – around 500 bicycles under PBS will be electric cycles.
- ₹14 bn sanctioned for developing Dehradun into a smart city.
- Bhubaneswar gets a digital kiosk called Human Interactive Interface Systems – HII-Systems.
- Prayagraj Development Authority to develop several roads on the civil lines area, which connects Nawab Yusuf road to GT road, as part of the smart city project.

## EQUIPMENT UPDATE



### JCB India launches its new ecoXpert backhoe loader

On the back of Excon 2019 theme 'Smart i-tech India@ 75', JCB India showcased its strong focus on digitisation and innovation. At the expo, the company launched its new ecoXpert backhoe loader; introduced the NXT series and the Quarry Master range of excavators, and also launched its new range of side engined telehandlers.



**Contact:** Manisha Sharma, Sr Manager-Corporate Communications, JCB India.  
**Mobile:** (0) 99102 66325. **E-mail:** manisha.sharma@jcb.com



### CASE India launches its CX220C excavator

CASE Construction Equipment unveiled Crawler Excavator CX220C, specially designed for tough applications, at Excon 2019. The excavator will be manufactured at the brand's Pithampur plant and available in India from April 2020.

**Contact:** Rachit Mishra, ANEA Brand Marketing and Communications, CASE New Holland Construction Equipment India.  
**Tel:** 0124-665 9100.  
**E-mail:** rachit.mishra@cnhind.com



### Leeboy India unveils series of compact motor graders

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

**Contact:** Jyothiraj CR, Associate Vice President-Sales, Leeboy India.  
**Mobile:** (0) 90030 87722.  
**E-mail:** c@leeboyindia.com



### Mahindra's BLAZO X Tipper Range at Excon

Mahindra Truck and Bus displayed its range of outperforming tippers, at Excon. The company exhibited the BLAZO X range of HCV tippers and its LCV tipper, the Loadking OPTIMO. This model, with its compact overall architecture, is ideal for last-mile applications.

**Contact:** Vipul Jain, Sr Manager-Marketing, Mahindra & Mahindra.  
**Tel:** (0) 98926 97930.  
**E-mail:** jain.vipul@mahindra.com



### TIL launches two new cranes at Excon 2019

TIL introduced two new cranes at Excon 2019 – RT880, an 80 tonne rough terrain crane and Mobiload 415 – a pick-n-carry crane. Other showstoppers at their stall included: truck cranes – TMS850 and TMS 860, jaw crusher – V2650 and all terrain crane – Grove GMK6300L.

**Contact:** Sumit Biswas, General Manager-Sales & Marketing, TIL.  
**Mobile:** (0) 98310 54573.  
**E-mail:** sumit.biswas@tilindia.com

## QUICK PICKS

- Atlas Copco launches four new compressors – XRH 1100 PLUS, XAWS 550 PACE, XAV216 PLUS, XA187PLUS and an extended light tower range, HiLight V4+ LED – at Excon.
- Cummins India showcases the QSF4.5 Bharat Stage-IV CEV and QSB6.7 Bharat Stage-IV CEV engines for the off-highway segment at Excon.
- Elgi Equipments launches the PG 90E -12.5 and PG 500-185 at Excon 2019.
- Gates launches MXG 4K in India, for first fit, industrial and automotive replacement markets at Excon.
- Putzmeister and Sany Concrete Solutions introduce three new products at Excon 2019: Batching Plant MT 0.35, Sany SYG5180THB300C-8 and the Putzmeister BSF 47 – 5.
- Schwing Stetter unveils 22 new products at Excon 2019.
- Shell Lubricants presents its flagship products in its Tellus, Rimula, Spirax and Gadus ranges including a special showcase of Shell Tellus S4, Rimula R5, Spirax S6, and Gadus S3 at Excon 2019.
- Trimble displays its range of solutions at Excon 2019: Earthworks solutions, paving solutions, connected site solution and the Trimble LOADRITE.
- Doosan Bobcat India launches Volvo Penta powered air compressors at Excon 2019.





## Ramco Cements to come up with greenfield cement plant in Andhra Pradesh



Ramco Cements is setting up a 3.15-mtpa greenfield cement plant in the Kurnool district of Andhra Pradesh, at an investment of around ₹15 bn. The company is, at present,

making another ₹2.5 bn in its grinding capacity in the state – the total capex, including these projects, will be around ₹34.30 bn by end of this year.

**Contact:** Balaji Moorthy, Executive Director-Marketing, The Ramco Cements.  
**Address:** Auras Corporate Centre, 98-A, Dr. Radhakrishnan Salai, Mylapore, Chennai-600 004.  
**Tel:** 044-2847 8666.  
**E-mail:** rrkn@ramcocements.co.in  
**Website:** www.ramcocements.in



## JSW Cement pushes IPO plans to 2021

JSW Group has pushed its plans to take its cement unit public with an IPO to 2021 due to the current slowdown which has resulted in a fall in demand. Its cement arm had initially planned to hit the market with an IPO on reaching its estimated 20 mt annual capacity by 2020.

**Contact:** Goutam Saha, Business Head-RMC, JSW Cement.  
**Address:** Bandra Kurla Complex, Near MMRDA Grounds, Bandra East, Mumbai-400 051.  
**Tel:** 022-4286 1000.  
**Website:** www.jsw.in



## New high strength cement in Goa

The Ramco Cements has launched Ramco Supercrete – the environment-friendly and high strength cement for crack-free concrete, compatible with M-sand and available in BOPP bags – in Goa. The high strength cement has previously been launched in Tamil Nadu, Kerala, Andhra Pradesh, Telangana and Karnataka.

**Contact:** Balaji Moorthy, Executive Director-Marketing, The Ramco Cements.  
**Address:** Auras Corporate Centre, 98-A, Dr Radhakrishnan Salai, Mylapore, Chennai-600 004.  
**Tel:** 044-2847 8666.  
**E-mail:** rrkn@ramcocements.co.in  
**Website:** www.ramcocements.in



## Cement demand likely to remain muted in Q3



Reportedly, according to channel checks run by brokerages, overall demand for cement has been muted in Q3 FY2020, growing at just 2 per cent YoY after having contracted by 2 per cent during the first two-quarters of the fiscal. Given weak government-led construction activity and housing demand refusing to pick up, cement manufacturers are likely to face another quarter of weak demand and declining margins.



## JSW plans green cement processing plant in UAE

JSW Cement is reportedly looking to set up a processing plant in the UAE for ground-granulated blast-furnace slag (GGBS), also known as green cement. The company's plans on the new investment in the country comes at a time of its \$110 mn investment in setting up a clinker plant at Fujairah.

**Contact:** Goutam Saha, Business Head-RMC, JSW Cement.  
**Address:** Bandra Kurla Complex, Near MMRDA Grounds, Bandra East, Mumbai-400 051.  
**Tel:** 022-4286 1000.  
**E-mail:** gautam.saha@jsw.in  
**Website:** www.jsw.in

## QUICK PICKS

- According to dealers, cement makers in the country cut prices of 50 kg bags of cement by ₹10-35 across regions due to a seasonal slowdown in construction activity and delay in government projects and an extended monsoon.
- UltraTech Cement opts for the latest MVR mill technology from Gebr Pfeiffer – 17 MVR mills of the MVR 6000 C-6 to be used for grinding mixed cement as it allows flexibility to the user.
- JSW Cement aims to nearly double its production capacity to 25 mtpa by 2023, by investing around ₹28.75 bn through a combination of debt and internal accruals, with added plans of expanding the manufacturing capacity at its Odisha-based subsidiary Shiva Cement.
- UltraTech Cement and Nirma Group reported to be the top contenders for Emami Group's cement division among other bidders that include Ambuja Cements, Germany's Heidelberg Cement and Dalmia Cements.

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# UPCOMING PROJECTS

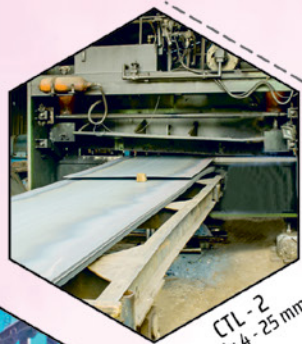
SL No.	COMPANY	PROJECT DETAILS	BUDGET (IN ₹MILLION)	CONTACTS	TYPE
<b>Airport / Aviation</b>					
1	Airports Authority of India (AAI)	The authority is implementing the construction of a new integrated terminal building at VSI Airport, Port Blair. The project is likely to be commissioned on June, 2020.	3,146.1	Prakash Reddy, GM (Engineering), VSI Airport Port Blair-744103, Andaman & Nicobar Islands. T: 03192-2445553 (Jameel Khaliq, Airport Director, T: 03192-235619, apdportblair@aai.aero)	Under Implementation
2	Airports Authority of India (AAI)	The authority is undertaking the expansion work of the terminal building at Mangalore International Airport. Around 40 per cent of the work is over so far, and the rest would complete by September, 2020. Harsh Construction is the contractor.	1,320	Rajiv Gupta, Joint GM (Engg-Civil), Kenjar Bajpe, Mangalore - 574142, Karnataka. T: 0824-2220400, M: 9915796935, rajivkgupta@aai.aero (V V Rao, Airport Director, apd_mangalore@aai.aero)	Under Implementation
3	Airports Authority of India (AAI)	The authority is undertaking the widening of a basic safety strip of runway and constructing of part parallel taxi track phase II at Mangalore International Airport. Around 65 per cent of the work is over so far, and the rest would complete by September, 2020.	1,210	Rajiv Gupta, Joint GM (Engg-Civil), Kenjar Bajpe, Mangalore - 574142, Karnataka. T: 0824-2220400, M: 9915796935, rajivkgupta@aai.aero (V V Rao, Airport Director, apd_mangalore@aai.aero)	Under Implementation
4	Mundra International Airport	The Centre has given its green nod for developing a commercial airport in Kutch, Gujarat.	14,000	1) Ashutosh Verma, Head (Aviation), Adani House, Nr. Mithakhali Six Roads, Navrangpura, Ahmedabad-380009, Gujarat. T: 079-25555367, 25556490, 909995848, 9538882202, ashutosh.verma@adani.com, ashutoshverma@gmail.com 2) Roy Paul, Associate GM (Corp Comm), Ahmedabad-380009, Gujarat. T: 079-25555157, M: 9825985338, roy.paul@adani.com	Conceptual
<b>Canal / Dam / Irrigation</b>					
5	Karnataka Neeravari Nigam	Plans to implement 1,300 irrigation projects in Shikaripur and Sorab taluks in the district. Tender process is already completed and the works would start soon. The government has already released the grant of ₹13 billion for the project implementation.	13,000	Mallikarjun B Ginge, KES, Managing Director, Coffee Board Building, 4th floor, Dr B. R. Ambedkar Veedhi, Bangalore-560001, Karnataka. T: 080-22283074, 22386016, M: 9481169126, knnl@knnlindia.com, www.knnlindia.com	Conceptual
<b>Construction</b>					
6	Roads & Buildings Department, Government of Telangana	The state government has approved the Cabinet sub-committee's report recommending construction of a new secretariat complex in the city of Hyderabad. The work is likely to start in 3-4 months. The completion period is 12 months.	4,000	I. Ganapathi Reddy, Engineer-in-Chief, NH, CRF, & Buildings, 5th Floor, Erram Manzil, Hyderabad-500082, Telangana. T: 040-23287301, M: 9440818001, cenhts@gmail.com, cebldgs@gmail.com, (Sunil Sharma, IAS, Principal Secretary, T: 040-23450923)	Conceptual

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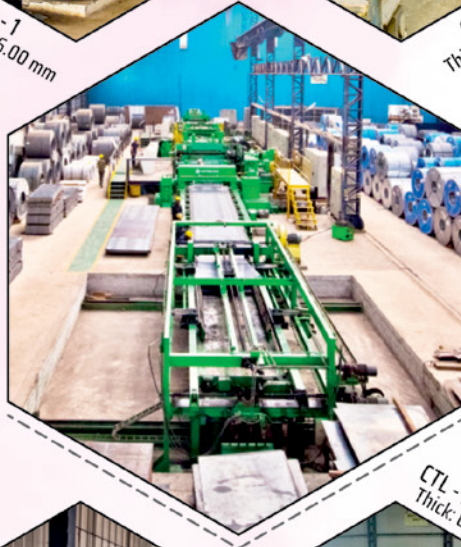
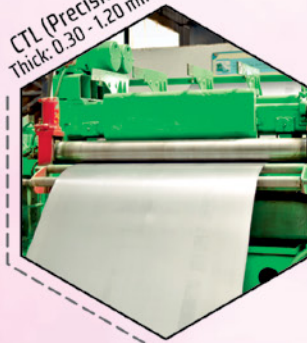


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# UPCOMING PROJECTS

SL No.	COMPANY	PROJECT DETAILS	BUDGET (IN ₹MILLION)	CONTACTS	TYPE
Maritime					
7	Kochi Refinery (KRL)	BPCL is setting up Propylene Derivatives Petrochemical Project (PDPP) at its refinery in Kochi, Kerala. The wastewater generated from the plant will initially be treated at PDPP and channelled to the refinery's effluent-treatment facility for final treatment and then disposed or recycled.	52,460	Prasad K Panicker, Executive Director (Kochi Refinery), PB No. 2, Ambalamugal-682302, Kochi, Kerala. T: 0484-2722061, 2720820, prasadpanicker@bharatpetroleum.in	Under Implementation
Railways					
8	South Western Railway	Shivamogga-Shikaripura-Ranebennur railway line is proposed to be constructed. The state government would release ₹ 7.50 billion as its share. The land acquisition is on. The work is likely to start by 2020 and take three years to complete.	10,000	R K Singh, CE/CN/W/BNC, 18 Millers Road, Banson Town, Bangalore -800046, Karnataka. T: 080-23430819, M: 9731665251, cecnwbn2019@gmail.com	Conceptual
Roads/Highways/Bridges					
9	NHIDCL	The authority is undertaking the four laning of Jhanjhi Jn to Demow section in Assam from km 491.050 to km 535.250 (Design Km 490.800 to Km 534.800) (with Toll Plaza) under SARDP. The completion is targeted by January, 2021. Gannon Dunkerley Company is the contractor.	4,634.90	Adil Singh, General Manager (T), 3rd Floor, PTI Building, 4 Parliament Street, New Delhi – 110001, Delhi. T: 011-23461600, 23461681, M: 8527586333, gmt4@nhidcl.com, adil.singh@gov.in (Nagendra Nath Sinha, Managing Director)	Under Implementation
10	National Highways Authority of India	The authority is implementing 4-laning of Meerut Bulandshahar section of NH-235 from km 8.800 (design chainage km 8.800) to km 66.482 (design chainage km 73.512) in the State of Uttar Pradesh under NHDP Phase-IV on hybrid annuity mode-Letter of Award (LOA). APCO Infratech is the contractor.	8,687.70	R. P. Singh, Project Director, 518, Niti Khand 1, Indirapuram, Ghaziabad-201014, Uttar Pradesh. T: 0120-2822406, M: 9906906574, gha@nhai.org	Under Implementation
11	Ahmedabad Urban Development Authority (AUDA)	The authority is undertaking the construction of 18 flyovers on the Sardar Patel Ring Road in Ahmedabad. The work is progressing on eight of these flyovers.	11,910	1) P. K. Tuvar, Additional Chief Town Planner, Sardar Vallabhbhai Patel Bhavan, Usmanpura, Ashram Road, Ahmedabad - 380014, Gujarat. T: 079-27545051-54, auda_urban@yahoo.co.in (A. B. Gor (IAS), Chief Executive Authority, T: 079-27545062), 2) Jigna Patel, PRO, T: 079-27545055	Under Implementation

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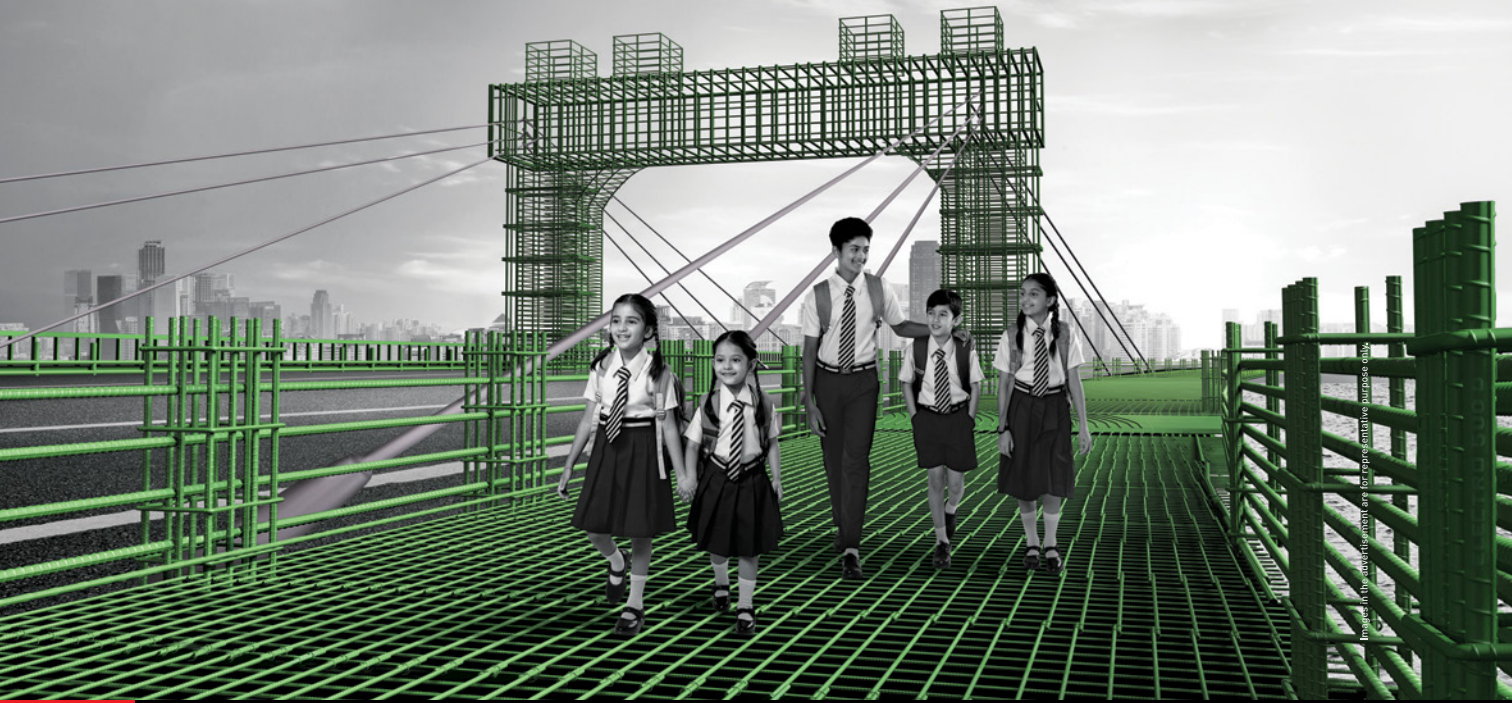
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# UPCOMING PROJECTS

SL No.	COMPANY	PROJECT DETAILS	BUDGET (IN ₹MILLION)	CONTACTS	TYPE
12	Mumbai Metropolitan Region Development Authority (MMRDA)	BKC-Chunabhatti flyover is under construction, connecting Bandra Kurla Complex to Chunabhatti in Sion. The flyover will be completed by November.	2,000	Arjun Korgaonkar, Executive Engineer, Plot Nos.C-14 & 15, Bandra Complex, Bandra (E), Mumbai-400051, Maharashtra. T: 022-26594186, M: 9870109521 (R. A. Rajeev, IAS, Metropolitan Commissioner)	Under Implementation
13	National Highway Authority of India (NHAI)	The authority is implementing road works between Saherbera and Mohulia near Jamshedpur covering 44.20-km. Iron Triangle (ITL) is the contractor.	3,800	Sadre Alam, Project Director, Village-Asanbani, NH-33, Post-Kandrabera, Dist Saraikela Kharsawan, Jharkhand. T: 0657-6455662, M: 9031302578, piujamshedpur@gmail.com	Under Implementation
14	National Highway Authority of India (NHAI)	The authority is implementing road works covering 26.30-km stretch between Vikas Vidyalaya and Rampur in Ranchi. Ram Kripal Construction from Ranchi is the contractor.	3,820	Ajay Kumar Sinha, Project Director, B-402, Road No.4-C, Ashok Nagar Ranchi-834002, Jharkhand. T: 0651-2245293, 2244029, 2240269, M: 9162927238, ranchi@nhai.org	Under Implementation
15	National Highway Authority of India (NHAI)	The authority is implementing the 77.30-km stretch between Rampur (Ranchi) and Chowka (in Seraikela-Kharsawan). The JVC of Bharat Vanijiya Eastern and Bhartiya Infra Projects are the contractors.	3,510	Ajay Kumar Sinha, Project Director, B-402, Road No.4-C, Ashok Nagar Ranchi-834002, Jharkhand. T: 0651-2245293, 2244029, 2240269, M: 9162927238, ranchi@nhai.org	Under Implementation
16	National Highway Authority of India (NHAI)	The company is implementing the development of road stretch from Kazhakkootam Junction to Technopark. Rameshwar Dayal and Sons - Cherian Varkey Construction Company (RDS-CVCC) are the project contractors. So far, land acquisition for 1.1 km stretch from Kazhakkootam Junction to CSI Mission Hospital has not been completed so far. The completion is targeted by April 2021.	3,560	Pradeep P, Project Director, PIU - Thiruvananthapuram, T.C.36/414 (5), Koyikkal Veedu, Kavu Lane, Palkulangara, Thiruvananthapuram-695024, Kerala. T: 0471- 2460924, M: 9884627338, piutvp@nhai.org/nhaitvm@gmail.com, nhaitvm@gmail.com	Under Implementation
17	NHIDCL	The authority is implementing the construction of four lane highway connecting km 17.3 of NH 37A and km 182 of NH 52 between Dolabari and Jamuguri in Assam on EPC basis under SARDP. Simplex Infrastructure is the contractor. As of now, around 12.95 per cent of the project is completed, and the rest will complete by February, 2021.	7,441	Adil Singh, General Manager (T), 3rd Floor, PTI Building, 4 Parliament Street, New Delhi - 110001, Delhi. T: 011-23461600, 23461681, M: 8527586333, gmt4@nhidcl.com, adil.singh@gov.in (Nagendra Nath Sinha, Managing Director)	Under Implementation

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# UPCOMING PROJECTS

SL No.	COMPANY	PROJECT DETAILS	BUDGET (IN ₹MILLION)	CONTACTS	TYPE
18	UPPWD	UPPWD is implementing the upgradation of MDR No 66E Haliyapur-Kudebhar (Section from Km 0.000 to Km 49.272) in District Sultanpur (Package No. P 04A/ Upmdrip/2015-16). APCO Infratech is the project contractor. The completion is targeted shortly.	1,746.4	Pradeep Kumar Saxena, Chief Engineer (Externally Aided Project) Lucknow, 96 Mahatma Gandhi Road, Lucknow-226001, Uttar Pradesh. T: 0522-2236496, M: 9451089512	Under Implementation
19	Uttar Pradesh State Highway Authority	The authority is implementing four laning (with paved shoulders) of Muzaffarnagar to Saharanpur via Deoband road section of SH-59 in Uttar Pradesh on design, build, operate, and transfer basis. APCO Infratech is the contractor. The project is about to complete by November - December, 2019.	7,528.8	Sarvesh Kumar Harit, G.M. (Technical), 4th Floor, Mandi Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow-226010, Uttar Pradesh. T: 0522-4150377, 4150311, M: 9997695454 (Awanish Kumar Awasthi, I.A.S., Chief Executive Officer, M: 9871115034, info@upsha.in)	Under Implementation

## Solar Power

20	Fortum India	The company plans to set up 300 MW of solar power capacity each year in India for the next five years, taking its total installed capacity to over 2,100 MW.	65,000	Manoj Gupta, Vice President-Solar (BD), Asia, Level 7, Tower A, Building 5, DLF Cyber City Complex, Gurgaon 122002, Haryana. T: 0124-4418800, manoj.gupta@fortum.com, fortum.india@fortum.com (Sanjay Aggarwal, MD)	Conceptual
21	Rays Power Infra	The company plans investment to develop and construct 450 MW solar projects under open access regulations. These projects will come up in the states of Andhra Pradesh, Haryana, Karnataka, and U.P. The work will start by December, 2019.	17,000	Sushant Makkar, Marketing Manager, 3rd Floor, Landmark House, Plot - 65, Sector - 44, Gurugram - 122003, Haryana. T: 0124-4669917, 8955663663, info@rayspowerinfra.com (Ketan Mehta, MD & CEO)	Conceptual

## Urban Development

22	Greater Chennai Corporation	Plans to implement the facelift of subways, and flyovers of Chennai city. The city corporation has identified 16 flyovers and grade separators for setting up vertical gardens and illuminating the same.	420	S Rajendiran, Chief Engineer (Bridges & Mechanical Department), (HQ), Ripon Building, Chennai-600003, Tamil Nadu. T: 044-25619317, 25619362, M: 9445190734, cebridges@chennaicorporation.gov.in (G.Prakash, I.A.S, Commissioner)	Conceptual
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<b>GAS &amp; WATER PIPELINE COATING</b>  <ul style="list-style-type: none"> <li>• High Performance, High Solid Epoxy Coating</li> <li>• Solvent Less Epoxy Coating</li> </ul>	<b>MARINE COATINGS</b>  <ul style="list-style-type: none"> <li>• Weldable/ Pre Fabrication Primer</li> <li>• Epoxy &amp; Antifouling Coating</li> <li>• PU Coatings</li> </ul>	<b>ARCHITECTURAL COATINGS</b>  <ul style="list-style-type: none"> <li>• Oil Primer &amp; Gloss Enamels</li> <li>• Water Base Primer</li> <li>• Water Base Interior &amp; Exterior Paint</li> <li>• Wood Coating</li> </ul>

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### Other Industrial Products

- Epoxy MIO Coatings
- Synthetic Alkyd Paint
- NC Paint, Oil Primers
- HR Paint (up to 900°C)
- Paint Remover
- Floor Coating
- FD Auto Paints
- Chlorinated Rubber Paint
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- PU Stoving Paint
- Epoxy Laquer



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### For Further Information

Please contact Customer Care Cell :

**Mobile : + 91 98240 47630 + 91 83470 07099**

**Email : [info@kromapaints.com](mailto:info@kromapaints.com)**



# DIARY

## EXHIBITIONS, CONFERENCES AND SEMINARS

### JANUARY 2020

**Light Building Construction Materials.**

**Organiser:** IndMesse Trade Fairs

**Date:** January 16-18, 2020.

**Venue:** Jio Garden, Mumbai.

**Constro 2020.**

**Organiser:** PCERF

**Date:** January 16-19, 2020.

**Venue:** Agriculture College Ground, Pune.

**Acetech Hyderabad.**

**Organiser:** ABEC Exhibitions & Conferences

**Date:** January 24-26, 2020.

**Venue:** HITEX Exhibition Centre, Hyderabad.

**IDAC.**

**Organiser:** Nova Exhibitions & Conferences

**Date:** January 30-February 1, 2020.

**Venue:** BEC, Mumbai.

### FEBRUARY 2020

**Municipalika Smart & Sustainability Solutions.**

**Organiser:** Fairfest Media

**Date:** February 12-14, 2020.

**Venue:** Palace Ground, Bengaluru.

**Make in Steel.**

**Date:** February 13, 2020. **Venue:** Delhi.

**BWT India 2020.**

**Organiser:** Built World Technology Alliance

**Date:** February 19-20, 2020. **Venue:** Bengaluru.

**Build Intec 2020.**

**Organiser:** Codissia Intec Technology Centre

**Date:** February 21-24, 2020. **Venue:** CODISSIA Intec Technology Centre, Coimbatore.

**Acxrex 2020.**

**Organiser:** ISHRAE

**Date:** February 27-29, 2020.

**Venue:** India Exposition Mart, Greater Noida

**Int'l Elevator and Escalator Expo.**

**Organiser:** Messe Frankfurt Trade Fairs India

**Date:** February 27-29, 2020. **Venue:** BEC, Mumbai.

**India Wood.**

**Organiser:** NürnbergMesse

**Date:** February 27-March 2, 2020.

**Venue:** BIEC, Bengaluru.

### MARCH 2020

**India Smart Utility Week 2020.**

**Organiser:** India Smart Grid Forum

**Date:** March 3-7, 2020.

**Venue:** Manekshaw Centre, New Delhi.

**CONEXPO-CON/AGG.**

**Organiser:** Association of Equipment Manufacturers

**Date:** March 10-14, 2020. **Venue:** Las Vegas, USA.

**Delhiwood 2020.**

**Date:** March 13-16, 2020.

**Venue:** Greater Noida, Delhi.

**Ambiente India.**

**Organiser:** Messe Frankfurt Trade Fairs India

**Date:** March 19-22, 2020. **Venue:** BEC, Mumbai.

### APRIL 2020

**Project Qatar 2020.**

**Organiser:** Ifp Lebanon

**Date:** April 7-9, 2020. **Venue:** Doha, Qatar.

**Roof India 2020.**

**Organiser:** Hyve

**Date:** April 23-25, 2020. **Venue:** BIEC, Bengaluru.

### MAY 2020

**Secutech 2020.**

**Organiser:** Messe Frankfurt Trade Fairs India

**Date:** May 7-9, 2020. **Venue:** BEC, Mumbai.

**LED Summit.**

**Organiser:** Messe Frankfurt Trade Fairs India

**Date:** May 7-9, 2020. **Venue:** BEC, Mumbai.

**Concrete Show 2020.**

**Organiser:** Informa Markets - India

**Date:** May 20-22, 2020. **Venue:** Hotel LaLit, Delhi.

**Safe Smart Cities Conference.**

**Date:** May 7-9, 2020. **Venue:** BIEC, Bengaluru.

### JUNE 2020

**INDEX 2020.**

**Organiser:** UMG Index Tradefairs

**Date:** June 4-7, 2020. **Venue:** BEC, Mumbai.

**India Warehousing Show 2020.**

**Organiser:** Reed Manich Exhibitions

**Date:** June 18-20, 2020. **Venue:** Pragathi Maidan, Delhi.

### JULY 2020

**HGH India.**

**Organiser:** Texzone Information Services

**Date:** July 8-10, 2020. **Venue:** BEC, Mumbai.

**Andhra Pradesh Construction Expo 2020.**

**Organiser:** Shiny Trade Expositions

**Date:** July 10-12, 2020.

**Venue:** S S Convention Hall, Andhra Pradesh.

### AUGUST 2020

**Smart Urbanation 2020.**

**Organiser:** Smart Cities Council

**Date:** August 18-19, 2020. **Venue:** Mumbai.

**CWAB 2020.**

**Organiser:** First Construction Council

**Date:** August 18, 2020. **Venue:** Mumbai.

### OCTOBER 2020

**IMME**

**Organiser:** Confederation of Indian Industry - Southern Region

**Date:** October 1, 2020. **Venue:** Eco-Park, Kolkata.

**ICF 2020.**

**Organiser:** First Construction Council

**Date:** October 1, 2020. **Venue:** Delhi.

### NOVEMBER 2020

**Bauma Conexpo India.**

**Organiser:** Messe Muenchen India

**Date:** November 3-6, 2020. **Venue:** Delhi.

### DECEMBER 2020

**Cement Expo 2020**

**Date:** November 1, 2020. **Venue:** Mumbai.

To share your events with us, write in at [feedback@ConstructionWorld.in](mailto:feedback@ConstructionWorld.in)



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## Communication Feature

# Ensuring Fire Safety

Gandhi Automations' deconstructs the essentials of fire shutters.

A traditional single skin fire resisting rolling shutter looks and operates in a similar way to a standard steel rolling shutter. The physical differences are that the materials used, are heavier and there are more fixings required.

### Fire shutter structural recommendations

The structure supporting the rolling shutter must be fire resistant (to BS476, Part 20, 21, 22, 1987), having a resistance equal or greater than that required of the rolling shutter itself and must be capable of supporting the shutter for the required period without compromising the performance of the rolling shutter.

### Fixing to masonry openings

The opening has to be constructed from masonry, reinforced concrete or dense concrete blocks and should have a fire resistance equal or greater to that of the door.

All concrete or masonry elements must be designed in accordance with BS5628: Part 3:1985 and have a density of  $>600\text{kg/m}^3$ . Lintels

spanning the structural opening should comply with BS8810: Part 1:1997.

Client should ensure that the openings are plumb, square and that the structure will accept raw bolt type fixings without cracking.

Subject to the fire shutter being fitted to a flat surface, gaps of up to 6mm are acceptable (for a distance of 150mm), but if, due to an uneven structural finish, larger gaps are apparent, they must be sealed with a suitable fire retardant material.

### Fixing to steel openings

When fire resistant rolling shutters are fitted to steel openings, the steel must be insulated and thermal bridging effects should be considered where insulation has been breached.

It is recommended that a critical steel temperature of  $400^\circ\text{C}$  and steel sections with an  $H_p/A$  below  $230\text{m}^{-1}$  are used for designing fire resisting steel supporting structures.

### Fixing to timber partitions

Fire resisting rolling shutters can be fixed to non-load bearing timber frames or steel framed partitions,

that are up to 2,750 mm wide and 3,250 mm high, (maximum area  $10\text{m}^2$ ), for up to 60 minutes under cover of the BRE test certificate FG 7941 N. The opening must be capable of carrying the weight of the shutter and be equal or greater

than the fire resistance of the rolling shutter assembly.

It is most important that the contractor adheres to the opening construction details, as these are also covered by the assessment and as such become the contractor's responsibility.

### Maintenance

Please note that it is a requirement under the Regulatory Reform (Fire Safety) Order 2005, that fire resisting rolling shutters are tested every six months. Access should therefore be allowed to the mechanism to enable this to be carried out. Gandhi Automations can offer routine testing and maintenance contracts on application. If no contract is signed, we cannot take any responsibility for the working condition of the shutters after the guarantee period.

### Fire shutters over fire exits and escape routes

As required, under Appendix B of the Building Regulations Approved Document B, fire resisting rolling shutters, across a means of escape, should only be released by a heat sensor. This can include a fusible link or electric heat detector. The closure of rolling shutters in such locations should not be initiated by smoke detectors or fire alarm systems, unless the rolling shutter is also intended to partially descend to form part of a boundary to a smoke reservoir.

(Communication by the management of the company)





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TO ORDER





## Communication Feature

# Anticipated Backhoe Loader

Doosan Bobcat unveils its B900 Backhoe Loader at Excon 2019.

The B900 Backhoe Loader from Doosan Bobcat was unveiled by HW Park, President-Asia, LA & Oceania on 10<sup>th</sup> December, 2019, at Excon. The product was revealed amidst cheers and fanfare, as it was one of the most anticipated products from Doosan Bobcat India.

B900 displays superior performance with features like: Digging depth finesse, breakout forces, component durability, comfortable operator cabin, advanced hydraulic system and best-in-class total cost of ownership. Serviceability and part availability is critical and hence Doosan Bobcat India has developed a comprehensive plan to support customers through their extensive 28 channel partners. The company also has developed a product support program called 'Bobcare' which provides peace of mind to the customers. This is also backed by a toll-free number so that the customers' problem can be registered and solved quickly.

### Industry leader

Doosan Bobcat is an industry

leader in the engineering, manufacturing and marketing of construction equipment with a turnover of \$3.6 billion in 2018. The world-renowned Bobcat, Geith, and Doosan Portable Power are parts of Doosan Bobcat brands. Headquartered in Seoul, Korea, Doosan Bobcat has its manufacturing facilities strategically located worldwide to serve various markets. Currently there are nine manufacturing facilities across the globe, mainly in USA, Europe, and China.

### Doosan Bobcat India (DBIN)

Established in 2007, it is a subsidiary of the Doosan Bobcat. Headquartered in Chennai, it serves through six direct regional offices across India. Backed by 28 plus channel partners, DBIN has an extensive customer reach and touch points across the country and the effort is on to continuously keep expanding. Focused on the Bobcat Skid-Steer Loader & Compact Excavator business,



(L-R) HS Kim, Director Commercial, Doosan Bobcat India; Miron Thomas, VP and Head, Volvo Penta India; HW Park, President-Asia, LA & Oceania, Doosan Bobcat; Natarajan, MD-Sales, Carlisle Industrial Brake & Friction; and Seshnath Balasubramanian, MD, Walvoil India.

DBIN has established itself as the market leader with over 50 per cent market share in the Skid-Steer Loader product category and has quickly become a leader in the 5-tonne below compact excavator product category.

The company plans to make the recently inaugurated Chennai facility – currently producing B900 Backhoe Loaders, a global manufacturing hub for export and a regional centre of excellence. Besides Backhoe Loaders, the company is also looking at localising its other Compact products to suit Indian market requirement and potentially exporting them as well.

The new facility is equipped with modern manufacturing equipment, testing facilities, office space for an R&D center, vendor development and a training center.

(Communication by the management of the company)



CONSTRUCTION TECHNOLOGY YEAR 2019-20

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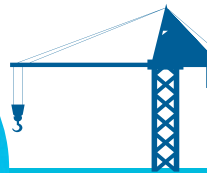
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## Communication Feature

# Dewatering Solutions

Grundfos offers intelligent submersible pumps for flood control.

Water logging during monsoons is a common occurrence, making many areas prone to floods. Due to the lack of efficient infrastructure, water gets accumulated and floods the low-lying localities. This disrupts livelihoods, making cities come to a standstill. Commercial establishments are worst hit by the downpour; many of their basements get flooded and cannot be accessed until the situation gets back to normal. Therefore, dewatering pumps play a major role in the run-off management.

Grundfos offers excellent and robust dewatering solutions with its pumps and systems. DPK and DWK are designed to be submersible dewatering draining pumps. These pumps can handle a particle size of up to 15 mm and can be installed in basements to manage the situation. They are an ideal solution as reliability and modularity are key elements required in critical situations. These pumps are highly useful in flood prone areas and construction sites.

### DPK /DPK.V Pumps

These drainage or dewatering pumps are equipped with a semi-open or enclosed

impeller, supported with a robust cast iron construction to improve their durability. They are intended for submersible use in underground collection tanks and around buildings for cost effective run-off management. They also have flexible installation options as they can be free-standing on a ring stand or be permanently installed on an auto-coupling system. The DPK.V range of pumps is designed with a state-of-the-art 'super vortex' impeller to transfer sewage, making the run-off management efficient. DPK.V pumps have a particle handling capability of 65 mm (or) 80 mm; hence they can be put into operation when there are coarse particles floating in the water. With the super vortex impeller, the design

minimizes clogging – making DPK.V ideal to transport wastewater.

### DWK Pumps

This pump range is primarily used for dewatering construction sites; their corrosion resistant components protect them from the harsh environment of such sites. The primary differentiator between a DPK and DWK pump is their discharge arrangement style. The discharge is placed on the top and does not require any additional support to be placed, thereby allowing the pump to be put through the smallest manhole to displace water.

### Features and benefits of DPK and DWK pumps

- Built in bi-metal sensor that protects the pump from overheating
- Double mechanical seal positioned in the oil chamber to minimize downtime
- Easy maintenance of oil plug in the seal chamber
- Hose or flange connection to be provided on the basis of requirement
- Wear and tear resistant impeller for an increased lifetime
- Capabilities to manage high pressure and harsh environments

### Applications

- Construction sites
- Run-off management
- Excavations
- Tunnels
- Drainage pits

(Communication by the management of the company)





## Communication Feature

# "We are very buoyant about the Indian market"

**- Rupinder Paintal, Director of Market Development, ExxonMobil Lubricants.**

The synthetic lubricant market in India is set to grow at a stable pace, **Rupinder Paintal, Director of Market Development, ExxonMobil Lubricants** shares more...

### Give a brief about the company's achievements

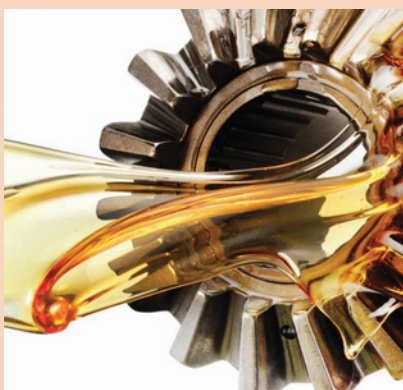
ExxonMobil™ has been at the forefront of lubricant technology innovation for more than 150 years. Today, we continue to develop new lubrication solutions for technologies of the future, by delivering an extensive range of leading technical services to help our customers optimise their maintenance programs, enhance equipment performance and ensure safety. Being an industry leader in synthetic lubricants, we have a full range of products that are available in the automotive, commercial and industrial business sectors. In India, we engage in the distribution, sales and marketing of Mobil-branded lubricants and offer innovative technical solutions. We cater to a plethora of industries ranging from mining, infrastructure, steel and manufacturing present across large and small enterprises.

With the prognosis of a strong economic performance for the next several years, the core sectors of the Indian economy – mining, infrastructure, steel and manufacturing are expected to be on a strong growth trajectory. With increased economic activity, the automotive sector is also



**Rupinder Paintal,**  
Director of Market Development,  
ExxonMobil Lubricants

expected to see a steady growth. Moreover, several initiatives from the government to create ease of doing business will further boost these sectors. Lubrication solution is the key for a strong performance in these industries and being a leader in synthetic lubricants, we are very buoyant about the Indian market.



### What is your market outlook on lubricants for the construction industry?

We are bringing our finest specialty lubricants to meet the growing demand for high-quality and improved-efficiency materials that enhance productivity and profits. In terms of product expansion, the Mobil SHC™ Elite is the newest member of our Mobil family of synthetic lubricants that provide performance advantages far exceeding the capabilities of conventional oils. These lubricants can help extend equipment longevity and generate potential energy savings, for our customers, while their significantly longer life, thanks to a 12x oil drain interval, lowers maintenance costs and reduces worker exposure during oil changes.

### How do you see this sector growing in the next five years?

The lubricants market in India is robust and expected to grow consistently at a CAGR of 4.64 per cent over the next five years. The construction and mining equipment sectors are the areas where we expect strong demand in the coming years. This growth can be attributed to green field projects, capacity expansions and embracing of new technology in key sectors like construction and mining.

**(Communication by the management of the company)**

## Communication Feature

# Take the Leap to Electric Power

Haulotte launches the new generation of electric rough-terrain mobile elevating platform: PULSEO.

Cities across the globe must rise to the challenges of – tackling air pollution, fighting global warming and offering their citizens the best possible living conditions. These constraints have led to the development of environment friendly alternative energies and have given way to PULSEO.

Lower energy costs, less air and noise pollution, all with optimal performance – that is the promise of the electrical architecture featured in PULSEO's machinery.

### HA20 LE and HA20 LE PRO

Thanks to their high-quality material and components, ideal protection for electric and hydraulic parts and extensive endurance testing, PULSEO models HA20 LE and HA20 LE PRO come with a 5-year warranty.

Designed to operate in silence, PULSEO generation cares for both the environment and people nearby. Its all-electric architecture makes it suitable for work in downtown areas and low-emission zones, as well as on green construction sites.

It keeps a low acoustic profile in any situation, offering new opportunities for use.

Equipped with non-marking tyres, this new generation of electric mobile elevating platform is perfectly suited for outdoor applications. Its oscillating axle and 4-wheel drive ensures optimal adherence and stability for outdoor work. Thanks to their silent electric operation, PULSEO models can be used at any time with no inconvenience for local residents.



### Features

**Leaves no trace:** Available with non-marking tyres, PULSEO machines can be used indoors.

**Perfect for sensitive floors:** PULSEO machines can be used on almost any floor with low ground pressure.

**Smaller footprint:** The machine's low tail swing and easy handling allow for operation in confined spaces.

**Independent 4-wheel drive** – with each wheel producing powerful torque and ensuring excellent traction distribution.

**An oscillating axle** keeps the wheels in contact with the ground for optimal adherence.

**Solid cured-on tires** provide the wheels with the flexibility needed to properly hold the ground, even on the roughest terrain.

### Battery life

High-capacity batteries and the ability to lower the basket by force of gravity with no power consumption, maximises battery performance for a full day's work. If additional battery power is required, the on-board range extender engine can rapidly recharge the batteries, while the machine retains its full operating capacity during the charge cycle. At the end of a shift, the built-in charger and its smart power management module optimise both the charge and life span of your batteries.

### Haulotte Activ'Energy

The Haulotte Activ'Energy Management system, developed in partnership with LITEN, was designed to extend the lifespan of your batteries.

### Haulotte Activ'Screen

Haulotte Activ'Screen makes life easier for users and technicians on a daily basis. It can be used to configure the machine, provide users with information to help them identify alarms, access the list of preventative maintenance procedures, diagnose and resolve malfunctions, if necessary.

### Mobile Diagnostic Tool

All Haulotte Activ'Screen functions are available on mobile devices via the Haulotte Diag app. Technicians, thus, enjoy the mobility necessary for even more effective configuration and diagnostics.

**(Communication by the management of the company)**

## Communication Feature

# Mini Motor Graders

LeeBoy India unveils new series of compact motor graders.

LeeBoy India Construction Equipment, one of the leading manufacturers of motor graders and other construction equipment in India, has launched – compact motor graders for India and other overseas developing markets.

### LeeBoy Motor grader 585

The new mini model LeeBoy Motor grader 585 is fitted with a 10 ft moldboard and powered by a 110 BHP Engine developing 380 Nm torque. This mini grader is designed to perform all functions any other bigger grader is supposed to deliver, with a high level of grading accuracy.

### Design features

LeeBoy 585 graders showcase advanced design features through their heavy-duty tandem axle, front axle leaning and oscillations, articulated frame structure, ZF power shift transmission and variable-flow load sensing hydraulic system – compared to other similar capacity models now available in India.

“This compact grader is fully designed in India by our engineers, taking into account the requirements of the small graders in India. This augurs well with the ‘Make in India’ initiatives promoted by the Government of India”, says **K Sunil Kumar, President, LeeBoy India.**

The compact design of the grader is highly suitable for small to medium road projects in villages and cities and also makes them the most preferred choice of contractors for road projects like the Pradhan Mantri Gram Sadak



Soyjna (PMGSY) schemes etc. As highlighted by **Hatim Shabbir, Director LeeBoy India**, “LeeBoy 585 offers 20 per cent more productivity and 10 per cent lower fuel consumption, compared to the similar range of products currently available in the Indian Market”

### Manufacturing facility

LeeBoy India has recently shifted their head office and manufacturing base from Bangalore to a fully owned new facility in Gumidipoondi, near Chennai. This new manufacturing facility is set in a sprawling 57-acre Industrial Park with a built-up area of more than 300,000 sq ft. LeeBoy India is also manufacturing excavators, backhoe loaders

and drills, among other things for domestic usage and export to various other countries, in this facility. The other two major models of graders manufactured in this facility are 785 and 985 models developing 150 HP and 173 HP respectively. With the addition of the 585 model in the product range, LeeBoy India has the unique capacity to manufacture graders from 110 HP to 280 HP in India.

LeeBoy India is a multi-product construction equipment company based out of Chennai manufacturing wide range of Motor Graders, Excavators, Backhoe Loaders and Hydraulic Drills.

**(Communication by the management of the company)**



## Communication Feature

# Inception to Golden Jubilee – An Eventful Journey

Triveni Enterprises: Rising that extra mile to deliver that extra perfection.

With its mission – “To be a leader with our products through technologies and change with the changing times”, for over a half century, Triveni Enterprises has been a closely held family business retaining the values of customer focus and quality, with which it was founded, by the late OP Agarwal, who was a pilot.

The company’s impressive track record of long-standing success can be directly attributed to its tradition of excellence and unwavering emphasis on innovation – which not only benefits its customers, but their customers as well.

Rich experience, integrity and reliability, are the bedrock of the company’s foundation. This combined with elements of superior capability and capacity, helps the company provide a wide range of solutions for the customer’s steel requirements.

### Managing challenges at every stage:

Following Triveni Enterprises’ vision – create a business model for generations to come, their core strength lies in the development and supply of products in accordance with client specifications. No matter what the steel requirements are, large or small, complex or simple – the company unfailingly meets all steel needs.

### World class infrastructure for a global edge:

Our plant is fully geared towards



**Ashirwad Agarwal,**  
Managing Director

meeting the growing demands of the infrastructure industry. The production facility’s design and processes are validated as per ISO 9001:2015.

### Diverse range of products and services include:

- Cut to length
- Precision Slitting
- PEB Products – HR Coils, C&Z Purlins, Colour coated sheets, Roofing & Galvanised Products
- Cut & Bend (Ready to fix TMT Steel)
- Structural Steel, Plates & TMT Mild steel & Serviced steel.

**Mission:** To be a leader with our products through technologies and change with the changing times.

**Vision:** Create a business model for generations to come.

### Long Term tie-up with the most reputed brands:

SAIL, POSCO, TATA and Arcelor Mittal.

### Helped Build Bangalore and India:

Triveni Enterprises serves multiple sectors like the infrastructure segment, automotive, engineering and fabrication, among the rest. Large project contractors, builders and industries have trusted Triveni over the years for the supply of steel for their projects.

### The management team behind Triveni’s success:

Headed by Ashirwad Agarwal who has a Masters in Business Administration and thorough knowledge in the field of steel, the company possesses a team of over 250 skilled personnel and is driven by a seasoned flat structured management with many decades of experience which ensures that every product is of impeccable quality.

### Beyond Marketing:

Triveni Enterprises has also diversified into Wind Power and Hydro Power. Apart from operations, the company also undertakes CSR activities that include being actively involved with a school in Haryana and other community services through a round table.

(Communication by the management of the company)

## Communication Feature

# Need of the Hour

**LEAPTOR offers smart solutions for smart cities.**

Urbanisation is now becoming the most happening global phenomenon. According to the United Nations report, about 68 per cent of the world's population will reside in urban areas by 2050. More and more people will be migrating to the metro region, putting more pressure on urban planning. Policy makers will need to optimise the management of their communities to create sustainable economic stability. We are living in the age of smart cities with rapid advancement of connected devices, software systems, and information communications technologies.

The smart city also demands smart security for the safety of residents in all means. Whether it is an airport, railway, or any other public transport area, the smart solution is the need of the hour. A company like Leaptor, that offers a range of smart solution products under two major categories- Physical Access Systems and Vehicular Access Systems, is therefore, also the need of the hour.

### Physical Access Systems

The Physical Access System comprises of products, which mainly focus on the physical protection of information, buildings, installations and other material resources. These systems are designed to bring down the risk of injury or security breach by the third party. At Leaptor, you will find five major products – Turnstiles, Swing Barriers, Flap Barriers, Sliding Barriers and Access Controls. The installation of these items can make the most determined intruder think twice. These smart security solutions by



**Leaptor** are largely installed in commercial areas including metro stations, airports, toll plazas, etc.

### Vehicular Access Systems

**Leaptor**, under its smart security solutions also offers vehicular access systems, which are designed to handle all vehicles entering into the zone. The access systems are mostly installed in commercial areas to restrict vehicular access in the checkpoints. The company offers the Bollards Boom Barrier Access Control system, which is impact resistant. **Leaptor's** Vehicular Access System is highly automated and is a power-connected equipment that can be installed at the edge. One can control the vehicle barrier in several ways to make it more

easy to use. All the products under Vehicular Access System from **Leaptor** are easy to deploy, user friendly, designed for users and closed parking, and compatible with access control devices.

### The pursuit of Smart City Security

When the concept of a smart city emerged, it was time to take the right steps. The implementation of new smart security was challenging. It was not surprising that security in this type of high-end technology was still overlooked. However, in recent times, the smart city trend with a security solution is becoming more deliberate and strategic. Public transport areas are now embedded with smart security systems that make the area more secure than the traditional ones.

### Smart Security to make life easy

Product manufacturers like **Leaptor** are flooding the market with new "smart security products" to build secure smart cities. Unsecure devices and security solutions are fertile ground for hackers and intruders, causing a breach of security. Smart city security solutions are the collaborative effort of product manufacturers, standard boards, and gateway providers. This allows making the smart city infrastructure strong.

**Leaptor** is changing the smart security system and each product is the result of innovative R&D and high-tech manufacturing facilities.

**(Communication by the management of the company)**

## Communication Feature

# Holistic Design Approach

Shaw Contract introduces Living Systems – a new collection of carpet tiles.

Shaw Contract recently introduced Living Systems, a Cradle-to-Cradle Certified™ Silver collection of 9x36 carpet tiles that represent a holistic design approach.

### Nature inspired design

Embracing the concept of regenerative design, Living Systems integrates human needs in the built environment with sustainable integrity. As biophilic design becomes

increasingly important in the built environment for its restorative



and rejuvenating benefits, Living Systems' nature-inspired and regenerative qualities are particularly relevant. With biophilic references that evoke a sense of calm, Living Systems is a welcome solution for healing spaces.

### Textured calm

This soft surface flooring collection, reduces stress through the use of patterns, textures and colours found in the natural ecosystem, creating a visual that promotes wellbeing.

(Communication by the management of the company)

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### IIW Mumbai Branch Office

B101, Hill View Tower, Opp Raj Legacy, Surya Nagar, LBS Rd,  
Vikhroli (W), Mumbai - 400083  
Tel: +91- 22- 2577 2637, 2579 4252 Email: [iiwmum01@gmail.com](mailto:iiwmum01@gmail.com)



## PRODUCT PARADE

### BLACK ELEGANCE

**Antica Ceramica** has launched its **Nero Collection**, which consists of fine ceramic material, artistically designed and customised to blend in the sophistication of the colour black with different trendy patterns. These **tiles** come with an excellent finishing touch and safety glazed porcelain coating that helps it to be non-slippery and simultaneously infuse harmony with the surroundings. A good alternative to marble and granite flooring, it is available in 60 x 60 cm, 60 x 120 cm and 20 x 120 sizes. The tiles come with the pristine base that has a high gloss – mirror-like shine, which lets them remain cool.

Contact: Antica Ceramica. Mobile: (0) 98910 75770.  
Website: [www.anticaceramic.com](http://www.anticaceramic.com)



### IOT SWITCHES

**Goldmedal Electricals** has introduced the latest version of its **IoT-enabled i-Touch Wi-Fi range of switches**, the 'i-Touch Wi-Fi 6 Module'. It is the latest entrant in Goldmedal's home automation portfolio. This product is similar to the company's other home automation products and can be installed directly in an existing junction box using the same wiring. The new module includes six switches, a fan regulator, two USB sockets and an international socket.

Contact: Goldmedal Electricals.  
Mobile: (0) 9987546567.  
Website: [goldmedalindia.com](http://goldmedalindia.com)

### LOUD AND BOLD

**Oak Sea Mist + Oak Winter** from the **Herringbone Twine** collection by **Mikasa** – premium engineered wooden floors from the house of **Greenlam Industries** – is a collection of monochromatic chequered flooring which brings any space to life. The classic shades of brown, large-scale chequered floor is an all-time design favourite which compliments minimalistic light coloured earthy décor pieces, balancing the setting of the room.

Contact: Greenlam Industries. Tel: 011-4279 1399.  
Website: [www.greenlamindustries.com](http://www.greenlamindustries.com)



### QUARTZ SURFACES

**HAIQU** has unveiled the world's largest **seamless quartz slabs** in India. **Quartz** is one of the hardest materials on the planet. **Engineered Quartz surfaces** use a scientifically calibrated mix of natural substances to create a non-porous, super-strong material that can be developed in different colours, patterns, textures, and finishes. It is stronger, more hygienic, and more eco-friendly than natural stones like marble and granite.

Contact: HAIQU. Website: [haiququartz.com](http://haiququartz.com)

## TILED AESTHETICS

**Orient Bell** has launched its **Duazzle** and **Magnifica** range of tiles. The Duazzle Collection consists of **wall tiles** while the Magnifica Collection consists of **floors tiles**. OBL touts their signature **Multiplica Effect** in this collection. The floor range has a mix of eclectic finishes such as glossy marbles, cement, wood, matte or slate, metallic and glint. The light and dark colored offerings in these tiles cater for different interior aesthetic sensibilities.

Contact: Orient Bell. Website: [www.orientbell.com](http://www.orientbell.com)



## LAVISH CARPETING



## WOODEN FURNITURE

**Wisma Atria Interiors** has launched the uniquely designed, furniture collection by **Emmebi** from Italy. The collection comprises of **beds, sideboards, a book case** and **chair**. The collection is available in different shades and textures of natural wood to give spaces both a modern and traditional look. The pieces of this collection are authentically made in Italy, which has been synonymous with passion for wood from generation to generation.

Contact: Wisma Atria Interiors  
Tel: 011-4107 6115.  
Website [www.wismaatria.in](http://www.wismaatria.in)



**Hands** has launched the **Lithology Collection**, which features an expansive range of **carpets** including the **Delta Rust** and the **Osar Grey Beige** that are hand tufted in wool and botanical silk. The new collection revolves around a bespoke design and is completely custom-made, designed, sized, and crafted around a unique, personal expression.

Contact: Hands. Tel: 011-26806475. Website: [www.handscarpets.com](http://www.handscarpets.com)

## FURNITURE LIGHTING

**Häfele**, as a part of its **Loox5** range, has introduced two new products: **Loox5 LED Strip Lights** and the **Loox5 Aluminium and Plastic Profiles**. The former is equipped with Samsung LEDs, and enhance the light quality for a homogeneous light distribution, ensuring a uniform colour temperature across the entire system. The latter includes a large selection of recess mounted and surface mounted profiles on which you can mount the Loox5 Strip Lights.

Contact: Häfele India. Toll-free: 180 0266 6667.  
Website: [www.hafeleindia.com](http://www.hafeleindia.com)



To share your recent launches, write in at [feedback@ConstructionWorld.in](mailto:feedback@ConstructionWorld.in)



## BAGGED IT!



### Dilip Buildcon

Contract value: ₹5,700 mn

Particulars: Airport construction

The company has been declared the L-1 bidder by the Airport Authority of India for the construction of new greenfield airport at Hirasar, Rajkot. The work is likely to start in January or February 2020.

### Nila Infrastructures

Contract value: ₹503.2 mn

Particulars: Development of market

The company bagged an EPC order for the development of a vegetable market at Kalupur from Ahmedabad Municipal Corporation (AMC).

### Shashijit Infraprojects

Contract value: ₹27.50/35 mn

Particulars: Industrial building construction

The company bagged an order from Astik Dyestuff for the construction of an Industrial Building at their Ankleshwar Site.

### NBCC (India)

Contract value: ₹5,000 mn

Particulars: Project consultancy

The company bagged an order from the Ministry of Environment, Forest and Climate, to provide principle project consultancy and execute the development of the National Museum of Natural History at Bhairon Marg, New Delhi.

### PSP Projects

Contract value: ₹1,045.9 mn

Particulars: Designing and building

The company bagged an order towards the design and building of Sabha Hall and Residential Complex for Maninagar Shree Swaminarayan Gadi Sansthan at Ahmedabad.

### ITD Cementation India

Contract value: ₹2,300-2,600 mn

Particulars: Construction of sewer tunnel

The company bagged an order from Municipal Corporation of Greater Mumbai for construction of sewer tunnel and allied works.

### Tata Motors

Contract value: ₹472 mn

Particulars: Electric vehicles

The company bagged an order for 500 electric vehicles from Lithium Urban Technologies.

### ITD Cementation India

Contract value: ₹14,000 mn

Particulars: Tunnelling works

The company bagged an order from Ircon International for tunnelling works on Sivok (West Bengal) to Rangpo (Sikkim).

### Bharat Heavy Electricals

Contract value: ₹2,000 mn

Particulars: R&M and uprating

The company bagged an order from the Kerala State Electricity Board for R&M and uprating of Kuttiyadi HEP from 3x25 MW to 3x27.5 MW.

## Afcons Infrastructure

Contract value: ₹15,260 mn

Particulars: Underground metro work

The company bagged a contract from BMRCL for Package 1 of the underground metro section. The project comprises underground work from the south ramp after Swagath Road elevated station to Vellara underground station covering 3.65 km.

## Maruti Infrastructure

Contract value: ₹109.2 mn

Particulars: Construction

The company bagged an order from the Ahmedabad Municipal Corporation towards the construction of 672 EWS Residential including internal Infrastructure and development work within various location in Ahmedabad.

## Maruti Infrastructure

Contract value: ₹160.4 mn

Particulars: Construction

The company bagged an order from the Ahmedabad Municipal Corporation towards the construction of 784 EWS residential including internal infrastructure and development work within various location in Ahmedabad.

## Bharat Heavy Electricals

Contract value: ₹2,000 mn

Particulars: Renovation

The company bagged an order from Uttarakhand Jal Vidyut Nigam (UJVNL) for renovation, modernisation and uprating of 4x36 MW Chilla Hydro Electric Plant (HEP).

## PSP Projects

Contract value: ₹270.2 mn

Particulars: Construction

The company bagged an order towards the construction of the Rajasthan School (Civil & MEP) at Ahmedabad.

## ITD Cementation India

Contract value: ₹17,710 mn

Particulars: Construction

The company bagged a contract from BMRCL for Package 4 of the underground metro section. The project comprises the construction of the 4.59 km underground section with four stations.

## ITD Cementation India

Contract value: ₹18,000 mn

Particulars: Design and Construction

The company bagged an order from Bangalore Metro Rail Corporation for design and construction of underground structures of Bangalore Metro Rail Project, phase-2.

## Dilip Buildcon

Contract value: ₹21,227.4 mn

Particulars: OB Removal Contract Mining

The company bagged an OB Removal Contract Mining work from Northern Coalfield (NCL) for Nigahi Project at Singrauli District in the State of Madhya Pradesh.

## Pitti Engineering

Contract value: ₹7,500 mn

Particulars: Traction motor

The company bagged orders from GE India to supply traction motor related products and other ancillaries. This will be used in locomotives being made for Indian Railways.

## KEC International

Contract value: ₹5,170 mn

Particulars: Construction

The company bagged an order for the construction of roadbeds, major and minor bridges and associated civil works, from Rail Vikas Nigam (RVNL) in India

## ARSS Infrastructure Projects

Contract value: ₹2,811 mn

Particulars: Two-lane road construction

ARSS-Nabam Tullon LLP has bagged an order towards the construction of two-lane road of Potin to Pangin section of NH-13 in the State of Arunachal Pradesh.

## ULCCS

Contract value: ₹187.7 mn

Particulars: Demolition and re-construction

ULCCS has recently bagged a deal from the Delhi Metro Rail Corporation (DMRC) for the demolition and re-construction of Palarivattom flyover.

# TENDERS

SL No.	ORGANISATION	LOCATION	TENDER VALUE (₹)	EMD/ DOCUMENT COST (₹)	DOCUMENT SALE DATE	SUBMISSION/ OPENING DATE
ARCHITECTS/INTERIOR WORK/CONSULTANCY						
1	Rail Vikas Nigam	Indore Madhya Pradesh	886,800,000	20,000,000 / 5,000,000	10/01/2020	10/01/2020 / 10/01/2020
Details: Tenders are invited from consultants, that are registered in India, to provide investigation, detailed design and project management consultancy (PMC) services for construction of electrified new BG railway line between Mangliya Gaon (Indore) - Budni stations (198 KMs) involving investigation, detailed design consultancy for tunnels & viaducts and PMC for road crossings, roadbed, bridges, tunnels, viaducts, P Way, electrical and S&T works in Bhopal and Ratlam divisions of West Central Railway and Western Railway respectively in Madhya Pradesh.			Contact: Vikas Awasthi, EDP, 174/2, Shakti Nagar, Habibganj, Bhopal-462 024, Madhya Pradesh. Tel: 0755-429 5368. E-mail: vikas.awasthi@rvnl.org, edbhopal.vikas@gmail.com			
2	Rail Vikas Nigam	Kolkata West Bengal	1,399,900,000	5,000,000 / NA	21/01/2020	21/01/2020 / 21/01/2020
Details: Tenders are invited for general consultancy cum project management consultancy works for construction of elevated and underground metro railway works from Majerhat to Esplanade of approximately 6 km in connection with Joka-BBD Bag Metro Corridor in the state of West Bengal.			Contact: GM,Civil,UG, RVNL, 24, Deshpran Shasmal Road, Kolkata-700 033, West Bengal. Tel: 033-2424 7338. E-mail: ugmtrorvnl@gmail.com			
EPC/CIVIL WORKS/FENCING/WALL WORKS						
3	Ministry of Defence (Navy)	Karwar Karnataka	8,257,600,000	NA / NA	27/02/2020	27/02/2020 / 27/02/2020
Details: Request for qualification (RFQ) for fleet base buildings, infrastructure and equipment Package. The scope of work involves construction works associated with Fleet Base Buildings, Waterfront and other areas. Contract package comprises the following major elements: 1) Construction of waterfront and other areas buildings, 2) Construction of associated external infrastructure, utilities, services and equipment within the waterfront and other areas.			Contact: Director General, Project Seabird, IHQ MoD (Navy), 2nd Floor, West Bick 5, RK Puram, New Delhi-110 066, Delhi. Tel: 011-2610 2357. E-mail: dgpsb-navy@nic.in			
4	Ministry of Defence (Navy)	Karwar Karnataka	6,748,700,000	NA / NA	27/02/2020	27/02/2020 / 27/02/2020
Details: Tenders are invited for Request for qualification (RFQ) for fleet base buildings, infrastructure and equipment package 2 (FBB-2). The scope of work involves 1. Construction of fleet base buildings in the logistics area. 2. Construction of associated external infrastructure, utilities, services and equipment within the logistics area.			Contact: Director General, Project Seabird, IHQ MoD (Navy), 2nd Floor, West Bick 5, RK Puram, New Delhi-110 066, Delhi. Tel: 011-2610 2357. E-mail: dgpsb-navy@nic.in			



SL No.	ORGANISATION	LOCATION	TENDER VALUE (₹)	EMD/ DOCUMENT COST (₹)	DOCUMENT SALE DATE	SUBMISSION/ OPENING DATE
5	Ministry of Defence (Navy)	Karwar Karnataka	19,372,100,000	NA / NA	27/02/2020	27/02/2020 / 27/02/2020
Details: Tenders are invited for RFQ for dockyard buildings, infrastructure and equipment (DY). The scope of work involves construction of Dockyard Buildings, Infrastructure & Equipment at Naval Base, Karwar, Karnataka.						
6	Rail Vikas Nigam	Yavatmal Maharashtra	12,618,300,000	40,000,000 / NA	24/02/2020	24/02/2020 / 24/02/2020
Details: Package-1: Tenders are invited for construction of road bed, major bridges, minor bridges, ROBs & RUBs including road approaches, station buildings, staff quarters, other service buildings, HL platforms, COPs, FOBs, general electrification and other works related to construction of New BG Line from km 78 (Excluding Yavatmal Station) to km 110 of Central Railway in Maharashtra. Package-2: Construction of road bed, major bridges, minor bridges, ROBs & RUBs including road approaches, station buildings, staff quarters, other service buildings, HL platforms, COPs, FOBs, general electrification & other works related to construction of New BG line from km 110 to km 157 (Near Digras Station) of Central Railway in Maharashtra.						
7	National Highways, Government of Tamil Nadu	Salem Tamil Nadu	278,535,000	NA / 11,200	21/01/2020	21/01/2020 / 23/01/2020
Details: Tenders are invited for widening to two lane with paved shoulders from km 414/4-428/0 and strengthening from km 422/0-425/0 of NH 67 including CD works, construction of retaining wall or breast wall.						
<b>ROADS/ROAD OVER BRIDGE//BRIDGES/FLYOVERS/HIGHWAYS</b>						
8	PWD, Government of Madhya Pradesh	Indore Madhya Pradesh	2,726,600,000	27,266,000 / 31,180	17/01/2020	17/01/2020 / 17/01/2020
Details: Tenders are invited for construction of elevated corridor bridge in Indore city from LIG Square to Navlakhasquare (Old NH-3) A-B road in Indore district in the State of Madhya Pradesh.						
9	PWD, Government of Madhya Pradesh	Jabalpur Madhya Pradesh	5,944,200,000	59,442,000 / 60,000	15/01/2020	15/01/2020 / 17/01/2020
Details: Tenders are invited for construction of elevated corridor flyover from Damoh Naka to Ranital Chowk to Madan Mahal Chowk up to Medical Road in the Jabalpur city of Madhya Pradesh.						
10	Tamil Nadu Highways Department	Tirunelveli Tamil Nadu	4,262,000,000	NA / 10,000	23/01/2020	23/01/2020 / 23/01/2020
Details: Tenders are invited for strengthening and widening the four lane of Tirunelveli-Sengottai-Kollam road of SH39 from km 5+000 to km 50+600 in the state of Tamil Nadu under TNRSP-II to be executed on DBFOMT on modified annuisty basis.						
Contact: Superintending Engineer (H), TNMB Building, 1st Floor, 171, South Kesavaperumal Puram, Off Greenways Road, RA Puram, Chennai-600 028, Tamil Nadu. Tel: 044-2495 1072. E-mail: tnrspl@gmail.com						

# PROPERTY RATES

## RESIDENTIAL AND COMMERCIAL

### MUMBAI

South Mumbai	Residential *₹/sq ft	Commercial *₹/sq ft
C Churchgate	48,000 - 52,000	27,000 - 30,000
Cuffe Parade	51,000 - 62,000	25,000 - 30,000
Colaba	37,000 - 45,000	25,000 - 30,000
Dadar	28,600 - 37,000	19,000 - 25,000
Prabhadevi	30,000 - 37,000	26,500 - 35,000
Nariman Point	58,000 - 92,000	32,000 - 35,000
Napean Sea Road	55,000 - 75,000	30,000 - 45,000

Western Suburbs	Residential *₹/sq ft	Commercial *₹/sq ft
Andheri (E/W)	14,000 - 18,500	13,500 - 16,000
Bandra (E/W)	35,000 - 42,000	25,000 - 35,000
Borivali (E/W)	11,000 - 13,500	16,350 - 16,000
Kandivali (E/W)	13,000 - 17,500	13,000 - 18,000
Khar (E/W)	33,000 - 39,000	18,000 - 25,000
Mahim (E/W)	25,000 - 34,000	15,000 - 22,000
Malad	13,500 - 18,500	12,700 - 14,500
Goregaon (E/W)	14,000 - 19,500	12,000 - 15,000
Vile Parle (E/W)	26,000 - 31,000	17,500 - 24,000

Central Suburbs	Residential *₹/sq ft	Commercial *₹/sq ft
Chembur	15,500 - 21,500	16,000 - 22,500
Ghatkopar	16,000 - 18,000	14,800 - 17,500
Kurla	10,600 - 14,200	8,000 - 12,000
Sion	16,500 - 21,600	15,000 - 22,000
Wadala	19,000 - 21,500	18,000 - 20,000

Navi Mumbai	Residential *₹/sq ft	Commercial *₹/sq ft
Airoli	8,000 - 9,200	4,000 - 6,000
CBD Belapur	8,000 - 10,000	4,000 - 8,000
Kharghar	6,900 - 9,500	5,500 - 6,900
Nerul	10,500 - 14,500	7,000 - 10,000
Panvel	4,800 - 6,600	2,900 - 5,700
Vashi	10,500 - 14,600	6,000 - 9,000
Kamothe	5,700 - 7,000	6,000 - 12,000
Kalamboli	5,000 - 6,500	2,500 - 4,200
Sanpada	11,500 - 15,800	9,500 - 15,000
Juinagar	8,000 - 10,000	5,000 - 10,000
Koperkhairne	8,800 - 11,600	5,500 - 6,900

Contact: Bhavin Kanabar, Space Realtors (India), Mumbai. Tel: 022-4299 9999. Mobile: (0) 99677 80009. Website: [www.spacerealtors.in](http://www.spacerealtors.in)  
Neeraj Agarwal, Sunny Real Estate Consultants, Navi Mumbai. Mobile: (0) 97027 33333. Website: [www.sunnyconsultants.com](http://www.sunnyconsultants.com)

\* The rates are subject to change based on the market fluctuations.



## KOLKATA

Kolkata	Residential *₹/sq ft	Commercial *₹/sq ft
Alipore	13000 - 19000	10000 - 11000
AJC Bose Road	16000 - 18000	12000 - 15000
Ballygunge	16000 - 22000	10000 - 13000
Behala	4500 - 5500	5500 - 6500
Bhowanipore	9000 - 12000	9000 - 11000
Belvedere Road (Alipore)	13000 - 18000	10000 - 11000
Garcha Road	8000 - 11000	5000 - 6000
Kaikhali VIP Road	6000 - 6500	6500 - 7000
Lake Town	6000 - 7000	4500 - 5500
Naktala Road	4500 - 5500	7000 - 9000
New Alipore	8000 - 12000	13000 - 16000
Park Street	16000 - 18000	16000 - 22000
Prince Anwar Shah Rd	9000 - 12000	7000 - 10000
Salt Lake (Sec V)	NA	4000 - 5500
New Town (Rajarhat)	4500 - 5500	3500 - 5000
Shakespeare Sarani	15000 - 18000	16000 - 20000
Thakurpukur	3000 - 4000	5500-6500
Baguihati	4500 - 5000	7000-8000
Sealdah	6000 - 7500	6000-7000
Park Circus Connector	8500 - 10000	10000-15000
Garia	3000 - 4000	5000-7000
Shyambazar	6500 - 7800	8000-12000

Contact: Pioneer Property Management, Kolkata.  
Tel: 033-4002 5555, 4018 5555. Mobile: (0) 98300 56308.  
Website: [www.pioneerproperty.in](http://www.pioneerproperty.in)

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## PROPERTY RATES

### RESIDENTIAL AND COMMERCIAL

#### CHENNAI

Chennai	Residential *₹/sq ft	Commercial *₹/sq ft
Alwarpet	18,000	20,000
Anna Nagar	14,000	14,000
Ashok Nagar	12,000	10,000
Basant Nagar	14,000	12,000
Egmore	15,000	15,000
Kilpauk	12,000	12,000
Guindy	10,000	14,000
Kodambakkam	13,000	13,000
Lloyds Road	14,000	14,000
Mylapore	15,000	15,000
Mugappair	10,000	10,000
Perungudi	10,000	10,000
Nungambakkam	20,000	20,000
Raja Annamalaipuram	15,000	15,000
T Nagar	15,000	20,000
Tambaram	8,000	10,000
Thiruvanimiyur	12,000	12,000
Velachery	10,000	12,000

Contact: Prabhu B, Atlas Estates. Tel: 044-4861 6554.  
Mobile: (0) 99419 45554. Website: [www.atlasestates.in](http://www.atlasestates.in)

#### DELHI

Delhi	Residential *₹/sq Yard	Commercial *₹/sq ft
Connaught Place	6,25,000 - 11,50,000	16,400 - 38,200
Chanakypuri	11,10,000 - 14,00,000	30,500 - 50,200
Defence Colony	5,50,000 - 7,00,000	24,200 - 42,500
Dwarka	1,25,000 - 3,10,000	7,700 - 22,600
Greater Kailash	4,00,000 - 5,40,000	24,800 - 43,300
Hauz Khas	4,45,000 - 5,75,000	21,800 - 38,200
Janpath	NA	21,600 - 38,000
Kalkaji	3,25,000 - 3,75,000	11,500 - 16,800
Karol Bagh	2,25,000 - 4,80,000	14,500 - 37,500
Rajendra Nagar	2,45,000 - 3,85,000	13,900 - 29,600
Saket	3,65,000 - 4,90,000	21,500 - 37,500
Vasant Vihar	6,35,000 - 7,45,000	22,800 - 39,500

#### NCR

Ghaziabad	31,500 - 1,15,500	5,000 - 7,800
Gurgaon	48,000 - 1,95,000	8,000 - 48,500
Noida	41,700 - 2,64,600	5,500 - 34,500

Ashwani Singh Virk, Jagson Realtors,  
T: 011-41751117, Mobile: 9810194724

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# BUILDING MATERIAL PRICES

## CEMENT

(Unit: 1 metric tonne; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
<b>ACC</b>								
Grade 43	5,625	9,500	7,550	7,375	7,300	7,500	7,000	7,000
Grade 53	6,125	8,250	6,300	7,375	7,550	7,500	7,000	6,375
PPC	5,500	8,750	7,650	7,250	8,300	8,000	7,150	7,000
<b>Ambuja</b>								
Grade 43	6,125	9,500	7,550	7,375	7,300	7,500	7,000	7,000
Grade 53	5,625	8,250	6,300	7,375	7,550	7,500	7,000	6,500
PPC	5,500	8,750	7,050	7,125	8,300	8,000	7,150	7,000
<b>Ultratech</b>								
Grade 43	6,125	9,500	7,350	7,375	7,300	7,500	7,000	7,000
Grade 53	5,625	8,250	6,550	7,375	7,500	7,500	7,000	6,500
PPC	5,500	8,750	7,650	7,375	8,300	8,000	7,150	7,000
<b>Birla Super</b>								
Grade 53	7,150	7,250	6,900	7,625	7,500	7,500	7,000	7,150
<b>White Cement</b>								
Birla	21,000	19,500	20,500	25,000	21,000	21,000	19,500	25,650
JK	21,000	19,500	20,500	25,000	21,000	21,000	19,500	25,650
<b>Coromandel Cement</b>								
Grade 43	5,650	NA	7,300	7,100	7,300	7,500	7,000	7,000
Grade 53	5,550	NA	6,900	7,100	7,050	7,500	7,000	6,875
PPC	5,650	NA	7,300	7,500	7,050	7,500	7,000	7,000
<b>Vasavadatta Cement</b>								
Grade 43	5,600	NA	6,900	7,375	7,000	NA	NA	7,375
Grade 53	5,500	NA	6,900	7,375	7,000	7,000	NA	7,375
PPC	5,600	NA	6,900	7,500	6,900	7,000	NA	NA

**Mumbai:** Tejas J Vora, Recons Group of Companies. Tel: 022-6169 1000, 2617 3045. Mobile: (0) 98336 73045. Shekhar, Neelesh Industrial Agency. Tel: 022-2408 2121. Mobile: (0) 93247 16192. Kirti Shah, Paras Sales Corporation. Mobile: (0) 92241 87800. **Delhi:** Girish Agarwal, Mahabir Building Material Store. Tel: 011-2664 2348. Mobile: (0) 98100 62315. **Chennai:** C Vijay, Chendur Murugan Cements. Mobile: (0) 96001 67888. **Pune:** Ravindra, Kamal Distributors. Mobile: (0) 98224 28574. **Hyderabad:** Ramesh, Sai Ram Steel Traders. Mobile: (0) 93934 57676, 93927 47575. **Bengaluru:** A Vinod, Sri Kodikrupa Enterprises. Mobile: (0) 97311 16894. **Ahmedabad:** PD Agrawal, Agrawal Traders. Tel: 079-2585 1616. **Kolkata:** Pintu Roy, Arun Distributors. Tel: 033-2557 8632. Mobile: (0) 98309 97677, 98309 97672.

## PAINTS: ENAMEL-WHITE

(4 litre: Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
Asian Paints	1,100	1,050	875	970	1,050	1,000	930	1,000
Kansai Nerolac	1,100	1,000	875	970	990	995	910	1,020
Berger	1,100	1,000	863	970	990	995	930	1,000
Shalimar	1,100	990	863	970	990	995	890	1,000
ICI	1,100	1,020	863	970	990	1,000	910	1,000

18 per cent GST extra (applicable for Chennai)

**Mumbai:** Pragmesh Kapasi, Poojan Colour Point. Mobile: (0) 78755 18999. **Delhi:** KL Wasan, Wasan Enterprises. Mobile: (0) 98105 81561, 98716 66577. **Chennai:** Umesh Dave, Tamilnad Traders. Mobile: (0) 72000 97550. **Pune:** Tejas Vora, Shahabad Cement Depot. Tel: 020-2588 5700. Mobile: (0) 99608 00820. **Hyderabad:** Mukesh Chaudhary, Tirupathi Hardware. Mobile: (0) 99633 47374. **Bengaluru:** GV Balakrishna, Balaji Paints and Hardware. Mobile: (0) 94487 55711. **Ahmedabad:** Shanti Prajapati, Swastik Traders. Tel: 079-2646 4766. **Kolkata:** Saif Alam, Hindusthan Paints. Tel: 033-4060 5635, 36. Mobile: (0) 80480 05598.

## CLEAR GLASS

(Unit: 1 sq ft; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
4 mm	33	38	40	41	38	36	36	40
5 mm	40	48	50	53	48	41	46	50
6 mm	48	58	60	64	58	55	56	60

**Mumbai:** Shabbir, Galaxy Glass Dealers. Tel: 022-2568 4351. Mobile: (0) 98207 69157. **Delhi:** Ajay Dhamija, Ajay Glass. Mobile: (0) 98102 65787. **Chennai:** Mohammed Inaamullah, Metro Glass Corporation. Mobile: (0) 98400 30316. **Pune:** Nomani Kachwala, Poona Glass Depot. Tel: 020-2445 9238. Mobile: (0) 99602 50786. **Hyderabad:** Firoz Hussain, Safe Glass Store. Tel: 040-6515 2786. Mobile: (0) 90006 52786. **Bengaluru:** AV Stayanarayan, Sri Venkateshwara Glass and Plywoods. Mobile: (0) 93437 05809. **Ahmedabad:** Anil Maken, Rajkamal Corporation. Tel: 079-2220 4090. Mobile: (0) 93761 12220. **Kolkata:** Pradeep Khetan, RP Glass Traders. Mobile: (0) 93304 60999.



## WOOD (Unit: 1 cu ft; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
Sal Wood	750	2,000	1,700	650-2,200	600-1,300	510-1,300	500- 1,200	2,400
Silver Wood	600	1,500	380	500	1,200	360 - 1,200	420 - 1,200	1,700
Sagwan Wood	1,350	1,600-4,000	1,400	1,600	1,000- 4,500	2,000	1,300	2350
Pine Wood	650	550	1,000	350	650-800	410-6,900	NA	600-1,200

## PLYWOOD (Unit: 1 sq ft; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
Commercial								
4 mm	23	33	15	22	28	20	37.5	23
6 mm	31	54	22	39	38	26	51.5	36
12 mm	46	46	37	56	48	42	67.3	46
18 mm	51	103	49	66	58	55	59.5	60
Waterproof								
4 mm	31	37.5	26	33	38	98	46.3	46
6 mm	51	48	43	43	55	55	61.7	55
12 mm	74	68	62	65	36	75	76	77
18 mm	87	85	77	88	105	98	110	93

## MDF (Unit: 1 sq ft; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
6 mm	22	17	15	25	27	27	40.5	44
9 mm	34	20	24	30	47	37	57.5	54
12 mm	36	28	29	40	48	48	57.5	74
18 mm	44	38	41	54	55	65	74	80

18 per cent GST extra (applicable for Mumbai, Pune and Delhi)

**Mumbai:** Lucky Ply & Laminates. Tel: 022-6113 0000, 2871 2556. Mobile: (0) 74981 88777. E-mail: umesh@timexply.com. Bharat Kothari, Kunal Timber. (Wood, Plywood, MDF). Tel: 022-2836 5879. Mobile: (0) 98696 20982. **Delhi:** Gangan Mohan, Ashu Plywood. Mobile: (0) 98117 16949. **Chennai:** Deva Kumar, BIS Building Interior Solutions. Mobile: (0) 90430 72221. **Pune:** Praful Chaudhary, Kailash Shah, Mayur Plylam. Tel: 020-2638 6678. (Wood, Plywood, MDF). Harshid Jain, Shree Vinayak Plywood & Hardware. Mobile: (0) 98237 48729. **Hyderabad:** Ali Mohammed, New Fame Timber Traders. Tel: 040-3951 7454. Mobile: (0) 98480 43123, 98853 78122, 90000 10700. **Bengaluru:** Poonam Kumar, Laxmi Home Studio. Tel: 080-3376 3006. Mobile: (0) 97425 55195. (Plywood, MDF). Shahabuddin Ali, Inaam Timber and Steel. Mobile: (0) 98453 40921. (Wood). **Ahmedabad:** Sumit Bagrecha, Virshakti Plywood. Mobile: (0) 98791 66731, 96620 04353. **Kolkata:** Ratanlal Khemka, Shree Chaitanya Timbers. Tel: 033-2560 4129. Mobile: (0) 98302 73976.

## ELECTRICAL WIRES (Unit: 1 m; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
1.5 sq mm	11	17	15	15	13	20	18	12
2.5 sq mm	17	28	24	24	22	20	28	22
4 sq mm	28	37	33	28	32	28	37	32

18 per cent GST extra (applicable for Mumbai, Delhi, Chennai, Pune)

**Mumbai:** Sushil Electricals & Company. Tel: 022-2208 4491. **Delhi:** Sanjay Taneja, Taneja Electrical & Lights. (Polycab). Tel: 011-6622 3747, 4644 0016. JS Electricals. Mobile: (0) 98111 56558. (Finolex). **Chennai:** Askhok Kumar, Sree Tambaram General Stores. Mobile: (0) 97890 50501. **Pune:** Hitesh Parwani, Parwani Enterprises. Tel: 020-3993 6427, 4276 5947. Mobile: (0) 98904 76754. **Hyderabad:** Ramesh, Ramesh Electrical. Tel: 040-2770 0809, 6638 5400. Mobile: (0) 93488 88088. **Bengaluru:** Muni Raj, Amar Electricals. Tel: 080-2225 8173. **Ahmedabad:** Anil Patel, Darshna Electricals. Mobile: (0) 99980 11000, 99743 18982. (Finolex). **Kolkata:** Anand Singh, Sinha Electric Stores. Tel: 033-2235 4821. Mobile: (0) 90070 30333, 98302 70590.

## STONES and TILES (Unit: 1 sq ft; Price in ₹)

	Mumbai	Delhi	Chennai	Pune	Hyderabad	Bengaluru	Ahmedabad	Kolkata
Granite	162 - 1,700	60-200	80-280	80-600	75-100	55-400	70-250	190-300
Marble	68-190	60-220	50-260	50-5,000	45-120	52-460	40-2,000	60-250
Makrana	600-1,000	250 - 1,200	275-1,200	300-3,000	75-1,000	45-375	65-800	300
Kota	35-60	28	50-80	32-75	55	55	30-50	45
Cuddappa	47	46	40-65	36	42	45-60	40-60	45

18 per cent GST extra

**Mumbai:** Sushil Vohra, Vikas Marble & Granite. Tel: 022-2846 4150. Mobile: (0) 98923 43332. **Delhi:** Alok Hasija, Meera Marbles. Mobile: (0) 98111 11569, 92120 43662. **Chennai:** Sunil Agarwal, Sunshine Marbles & Granites. Mobile: (0) 91766 14499. **Pune:** Santosh Ganeshkar, Mohan Stone Depot. Tel: 020-2612 8805. Mobile: (0) 98605 03142, 98220 24803. **Hyderabad:** Mohammad Abdul Muqet, Super Stones & Marbles. Mobile: (0) 99662 83516, 98855 13354. **Bengaluru:** Mohammed Ali, Avon Granite and Marble Company. Mobile (0) 98805 92017. **Ahmedabad:** Rakhi T Neema, Rudra Ceramic and Stone. Tel: 079-3049 5171. Mobile: (0) 78785 01212. **Kolkata:** SK Singh, Durga Marble and Tiles Co. Tel: 033-2552 1425. Mobile: (0) 94333 56962.

# BUILDING MATERIAL PRICES

## STEEL (Unit - 1 mt; Price in ₹)

	Material	Mumbai*	Delhi*	Chennai*	Pune	Hyderabad*	Bengaluru*	Ahmedabad
Reinforcement								
MS	6 mm dia	34,700	31,000	37,200	33,100	32,000	41,000	31,400
TMT	8 mm dia	32,400	29,600	35,200	32,700	34,500	39,000	32,100
□	10 mm dia	31,900	29,600	38,700	31,700	34,500	38,500	32,000
TMT	12 mm dia	31,900	29,600	38,900	31,700	34,500	38,500	32,000
TMT	16 mm dia	31,600	29,600	38,900	31,700	34,500	38,500	32,000
TMT	20 mm dia	31,600	29,600	38,900	31,700	34,500	38,500	32,000
TMT	25 mm dia	31,600	29,600	38,900	31,700	34,600	38,500	32,000
Angle	50 x 50 x 6	33,000	29,000	31,700	34,000	34,100	35,000	34,200
	150 x 150 x 12	36,000	29,000	30,200	34,000	34,200	39,000	34,500
Channel	75 x 40	33,800	29,000	30,700	34,200	33,500	35,500	37,000
	100 x 50	33,000	29,000	30,700	34,200	33,400	35,500	33,000
	125 x 65	33,600	30,500	29,700	35,000	33,500	36,000	33,000
	150 x 75	33,600	30,500	29,200	35,000	33,500	36,000	33,000
	200 x 75	34,250	31,600	29,200	36,500	33,800	36,000	33,000
	300 x 90	36,250	31,700	29,200	37,000	34,000	36,500	34,500
	400 x 100	37,750	31,700	29,200	38,000	34,200	39,000	30,000
Beams	125 x 70	34,750	30,000	33,200	36,000	35,400	35,500	32,000
	150 x 75	33,800	28,500	33,200	35,000	34,900	35,500	31,600
	200 x 100	33,800	32,100	33,200	36,000	34,800	36,000	31,900
	250 x 125	34,700	32,100	30,200	36,500	34,700	36,500	31,800
	300 x 140	35,750	29,800	30,200	37,000	34,500	37,000	32,000
	400 x 140	37,750	29,000	31,700	38,000	35,000	39,000	31,000
	450 x 150	38,750	32,000	34,700	38,500	35,000	39,500	32,750
	500 x 180	39,250	31,000	34,300	40,850	35,000	40,000	33,100
	600 x 210	39,750	34,000	36,700	40,850	35,000	41,000	35,600
Plates	5-12 mm	35,500	34,800	34,200	39,000	n	41,000	35,000
	12-20 mm	36,000	32,100	34,200	39,500	n	41,500	39,000
	21-40 mm	36,000	32,100	35,300	40,000	n	42,000	39,800

18 per cent GST extra (applicable for Mumbai)

**Mumbai:** Sunil Nagori, Viswanathan Iyer, Sansui Steels. Tel: 022-2867 3673. Mobile: (0) 98211 13673, (0) 98211 10010. **Pune:** Ashish Kasat, Manish Industrial Corporation. Tel: 020-2566 8682, 2612 4182. Mobile: (0) 94220 15212. **Chennai:** Kunal Maheshwari, Kapil Metal Processing Agencies. Tel: 044-2522 5443. Mobile: (0) 95000 95902. (Ravi Sanker). **Hyderabad:** Sushil Kumar, Sanjay Agarwal, Tulja Bhavani Ispat. Mobile: (0) 92477 85403, 98480 14420. **Bengaluru:** Umang Agarwal, Kaushalesh Steels. Mobile: (0) 98450 22217. **Ahmedabad:** Ankit Mehta, Shree Mallinath Steel Traders. Tel: 079-6524 7800. Mobile: (0) 99254 60170.

\*Figures are approximate and subject to change

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KYB Conmat	27	27	<input type="checkbox"/>	IBEX 2020	89	89	<input type="checkbox"/>
L&T construction & mining machinery	63	63	<input type="checkbox"/>	India Hospital Design & Build	155	155	<input type="checkbox"/>
Propel Industries	45	45	<input type="checkbox"/>	India Smart Utility week	125	125	<input type="checkbox"/>
Reach International	103	103	<input type="checkbox"/>	MESSE Frankfurt	19	19	<input type="checkbox"/>
Writgen India	47	47	<input type="checkbox"/>	Municipalika	177	117	<input type="checkbox"/>
<b>Construction Software</b>				WELD India 2020	167	167	<input type="checkbox"/>
Trimble Solutions India	17	17	<input type="checkbox"/>	World of Manufacturing 2020	87	87	<input type="checkbox"/>
<b>Doors &amp; Windows</b>				<b>Others</b>			
Avians Innovation Tecnology	39	39	<input type="checkbox"/>	Jolly Board	55	55	<input type="checkbox"/>
GEZE India	13	13	<input type="checkbox"/>	PCM	35	35	<input type="checkbox"/>
NCL Veka Ltd	76-77	76-77	<input type="checkbox"/>				

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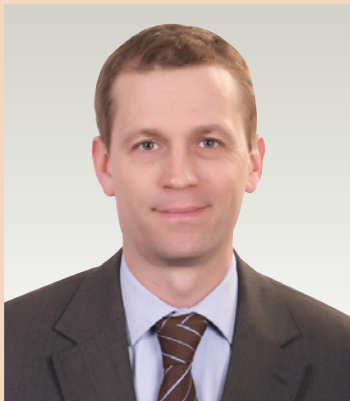


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## NEWSMAKERS



### POWERFUL ACHIEVER

Under the leadership of its CEO **Daniel Bircher**, Zurich Airport International AG has bagged the contract to design, develop and operate the ₹295.6-billion international airport at Jewar, outbidding Indian companies such as DIAL and Adani. Bircher has set the ball rolling on making the upcoming airport in Noida one of the biggest in Asia, and is determined to equip it with world-class facilities while giving it a unique cultural atmosphere. Prior to his role as the CEO of Zurich Airport International Asia, Bircher was the COO at Aeroporto International de Belo Horizonte in Brazil and has also been the Director of Operations at Bangalore International Airport. In his endeavour to be a crucial part of the Indian growth story by developing the Jewar Airport, we wish him success and look forward to the feats the company achieves in the construction of the airport.

### NEW CHAIRMAN

The Patna Metro Rail Corporation has recently welcomed its new chairman – IAS officer **Shiv Das Meena**. He will now oversee the upcoming Patna Metro project, which is estimated at ₹134.11 billion and expected to run on two corridors by 2024. The project is calculated to benefit more than 26.23 lakh people directly or indirectly. Meena has stepped in at a time when the work on the project is about to commence and he will, as a result, spearhead the progress of the upcoming metro through various challenges and achievements. His previous experience in well-equipped roles as the chairman of NBCC (India); joint secretary, MoHUA, and Ministry of Urban Development; principal secretary, Public & Rehabilitation Department, Government of Tamil Nadu; and principal secretary to the Tamil Nadu Chief Minister, will undoubtedly guide him in his current position to lead his team towards successfully completing the Patna Metro in tune to global standards.



### STRONG LEADER

**Praveen Pardeshi**, Municipal Commissioner, Municipal Corporation of Greater Mumbai, has guided the body towards victory with the Supreme Court ruling in the favour of Mumbai's sought after ₹140 billion coastal road project. In a bid to decongest traffic and provide ease of access between the northern and southern parts of the city, the project was put on the map to reduce travel time considerably. Pardeshi led the team closer to making the road a reality as the apex court gave its approval to reclaim the land meant for construction of the eight-lane 29.2 km-long project. On completion, it is projected to be used by around 130,000 vehicles per day and will reduce the 120-minute ride between South Mumbai and western suburbs to 40 minutes. Pardeshi has reaffirmed the corporation's position in building a better and more sustainable Mumbai, and we wish him success for all his undertakings.



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# EDITOR'S NOTE

## RIGHT TIME, RIGHT PLACE. CORRECT THE COURSE.

Wake up; it's time to face reality. Economic growth will at best touch 5 per cent. Government spending will be tepid and only a sharp decline in oil price could give the government more elbow room. The infrastructure spending of ₹100 trillion in the next five years or the \$5 trillion economy in the next five years will all seem increasingly like a Pied Piper's dream unless the government takes the job of managing economics and finance, seriously and stops meddling with issues that are compounding the obstacles to economic recovery.

Policy interventions can serve to change the sentiment to positive only briefly. What makes the real difference is 'reform'. The moment the **Land Acquisition Act**, provided for the government to purchase land from the rightful owners for the purpose of infrastructure projects at a price four times the ready reckoner rates, our fate was sealed. Land, our principal resource, has been guzzling our resources and the real beneficiaries are 'behind the scenes'. It is time that policymakers take a relook at the act. Land pooling and experiments on making landowners stakeholders in infra projects have been successfully implemented in Navi Mumbai, Pune and Andhra Pradesh. There are lessons and solutions. Considering the very high cost of land, such out-of-the-box solutions are worth exploring further.

Fundraising for critical infrastructure projects is another issue. Informing the nation about the Central Government's intent to spend **₹100 trillion on infrastructure** over the next five years without how this is going to happen has only made the vital private sector 'wait and watch'. At the same time, the divestment of public-sector units (PSUs) needs to be accelerated to bring about accountability and unlock value in several such assets. Fair offloading of such large shareholdings will see a surge interest from both domestic and foreign investors.

India gets about 29 million international tourists a year and earns ₹1.94 trillion from tourism fees, or US\$28 billion. The spending of tourists contributing to the economy is an additional benefit. Given the same, our recent spate of politically charged actions have done little to encourage tourists to include India in their itinerary. Even Goa is suffering a 50 per cent



decline in tourists in its peak December month! If we nurture tourism well, it will not just add phenomenal international spending into our economy gasping for growth but will also spur infrastructure investment where private investment could be initiated in a big way.

Commercial mining is the silver lining for 2020 as nearly 200 coal blocks are up for auctioning, constituting 400 million tonne of coal at peak capacity over the next five years. The coal ministry is expected to issue bidding rules for commercial coal mine auctions and hold stakeholder consultations in January.

Although Union Minister Nitin Gadkari enthused the EXCON gathering by indicating an expected spending of ₹2 trillion in the coming year followed by ₹3 trillion in the following year and ₹17 trillion over the next five years on the roads sector alone, it is not clear how the government will have access to these funds. To my mind, our only hope is FDI, which is slated to come from Saudi Arabia and Canada currently. However, our PM can use his charisma to secure funds from Japan, USA, Korea and Germany.

Domestic institutional investors (DIIs) and foreign portfolio investors (FPI) together invested ₹1.43 trillion (around \$20 billion) in 2019, the highest in any single year over the past fifteen years. They probably know something we don't. All eyes on the Budget.

Best wishes for a 'trouble-mukta' year ahead!

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

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