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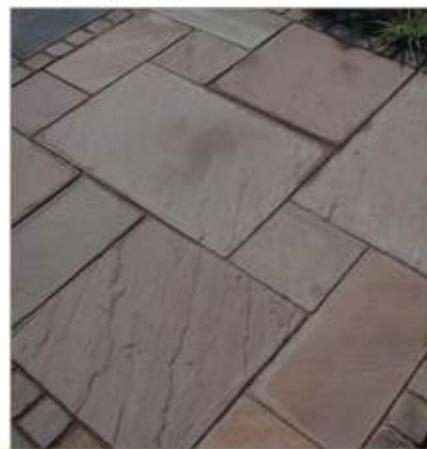
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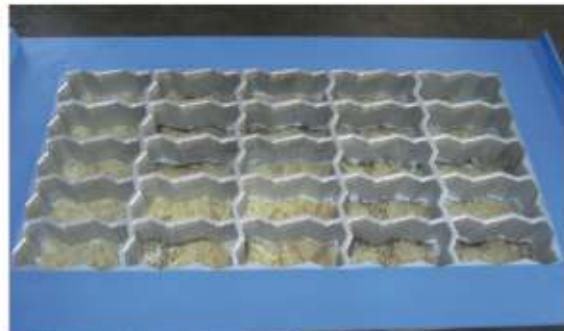


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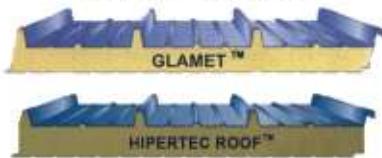
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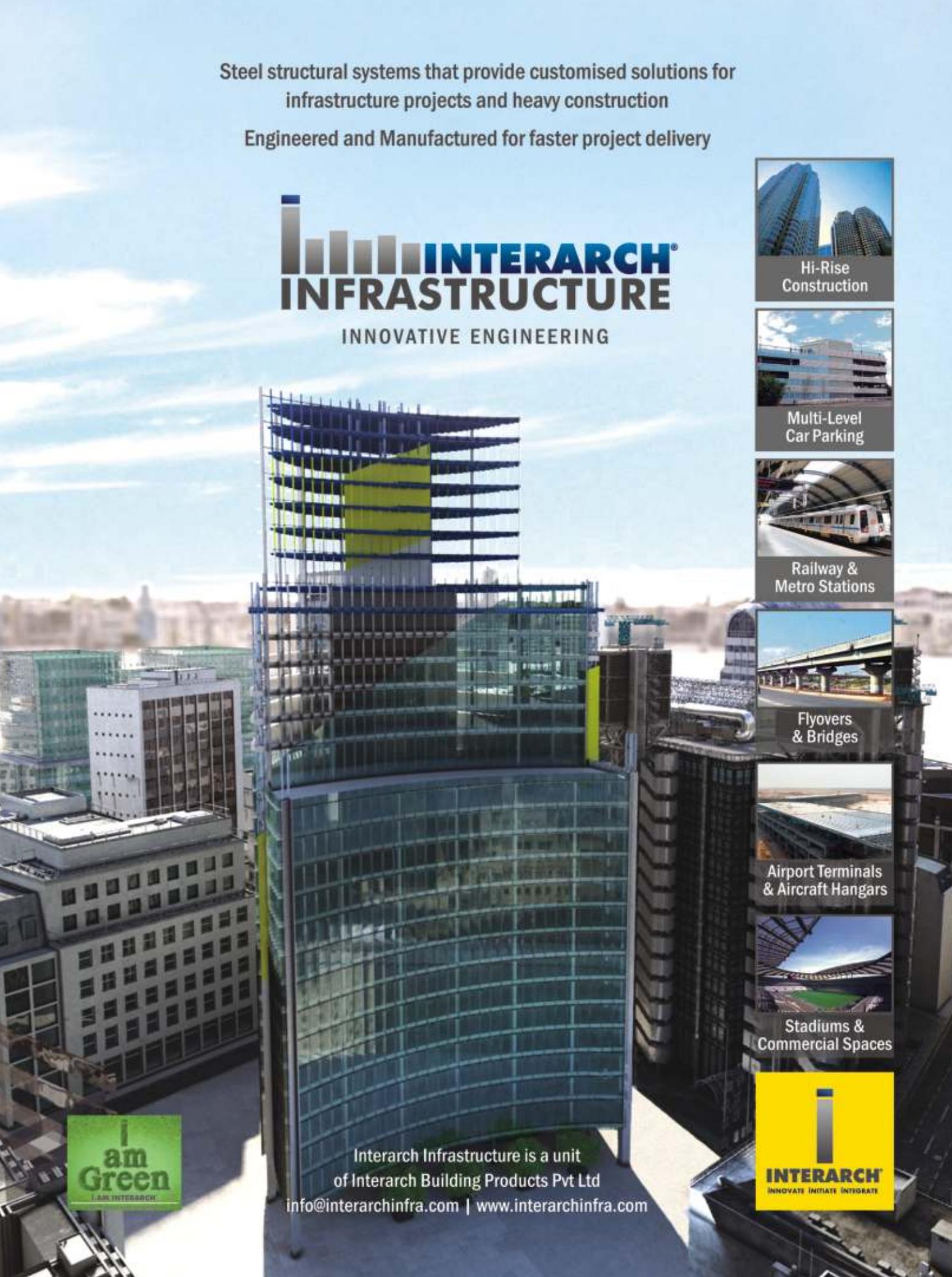
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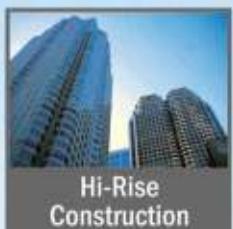
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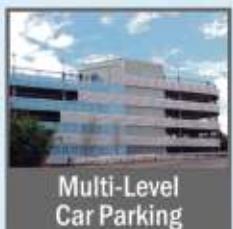


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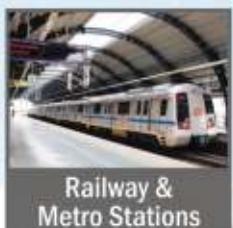
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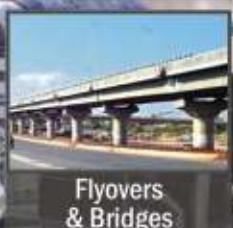
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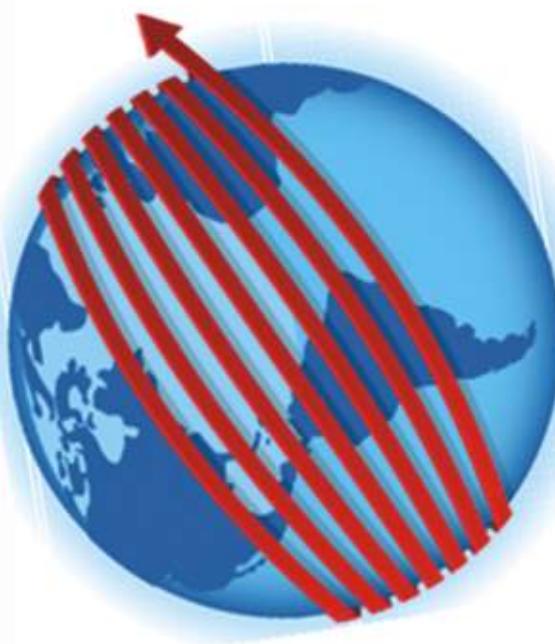


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Up -Scaling Infrastructure



Development of adequate Infrastructure is undoubtedly one of the most critical factors affecting the growth of an economy. Given the backdrop that India's twelfth five year plan has proposed an investment of \$1 trillion in infrastructure, of which close to \$500 billion is expected to be brought in by the private sector, substantial key measures are required to make the sector investment worthy.

Undoubtedly the fiscal policy will have a very critical role to play, especially at a time like this when global business sentiments are low and our economy is in the grip of a slowdown. Among the various key measures being considered by the FM to provide the fillip to investment, I am certain that the foremost step would be to exempt the infrastructure companies from payment of Minimum Alternative Tax (MAT). Currently, infrastructure projects are entitled for a tax holiday under section 80IA for 10 consecutive years during the first 15-20 years of their operation. The levy of MAT during this period has greatly negated the tax benefit offered under this section.

Another move that the FM can make for fuelling this growth is to continue providing tax benefit to the power sector under section 80IA Sunset clause, which entitles a company for tax benefits only if it starts generating power by the end of current fiscal year. In order to attract large investments in power generation, it is critical that the Sunset clause be extended for at least another 5 years. Also, immediate steps should be taken to exempt the interest income of the financial institutions, received from the Rupee term loan financed to the companies eligible for claiming deduction under section 80IA (4). This will go a long way in counter to the prevalent, unwelcome environment for infrastructure financing.

Further, owing to rapid urbanization and the subsequent growth in demand for housing from the lower middle income population, it is essential that the government go-to-bat for the low cost housing sector in the country. Currently, the government offers interest subvention of 1% for low-cost housing loans up to INR 15 Lakhs, provided the housing cost does not exceed INR 25 Lakhs. The FM should consider extending the interest subvention scheme to a total housing cost of at least INR 35 Lakhs as the demand for housing can have a ripple effect and, therefore, an incentive for investments in low-cost housing will stimulate demand in several subsectors of the industry.

Granting infrastructure status to large township projects may also contribute significantly to the cause. Tax benefits under section 10(23G) will not only help in fighting the slowdown but will also rein in the sharp increase in dwelling prices that we have witnessed in the last few years.

There is a need for exempting holding companies from the payment of Dividend Distribution Tax (DDT), if the dividend received from subsidiary units is invested in infrastructure business. This will also contribute in pushing up the investment activities in infrastructure sector.

High hopes from the ongoing growth story of Indian construction industry are not just restricted to the domestic borders but reach out to faraway lands. This is partly due to the fact that massive investments anticipated in Indian infrastructure also have enormous effects on large associated markets like construction equipments.

If implemented effectively, the consequences of schemes like 12th five year plan would pave the way for construction equipment demand substantially, particularly for the hi-tech and sophisticated equipment and machinery. In this context, the relevance of jumbo trade fairs like Bauma Conexpo India, 2013 - happening at this juncture comes to the fore to enhance capacity of construction equipment for up-scaling infrastructure in the country and to bolster the Nation's image in the eyes of the world outside!

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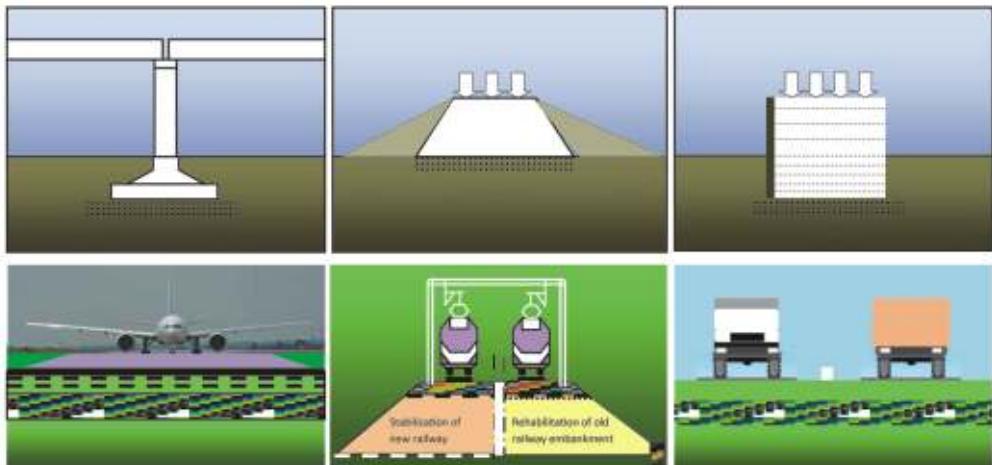
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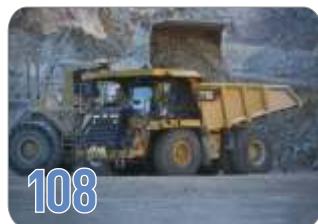
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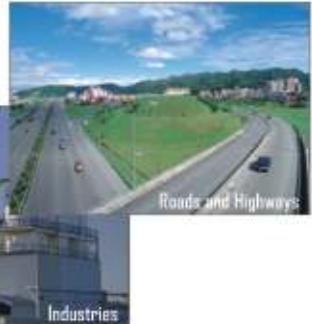
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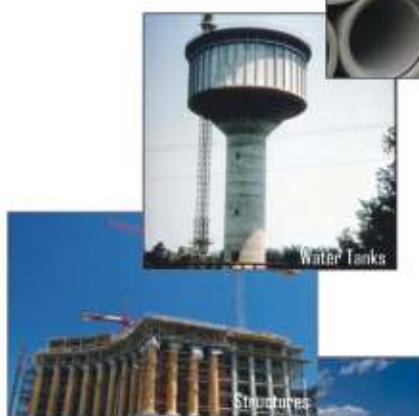
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CONSTRUCTION EQUIPMENT

Case to upgrade its popular 752 tandem compactor

Case Construction Equipment, market leader for vibratory compactors in India will introduce water cooled engine Case 752 tandem compactor at the Bauma Conexpo show to be held at Mumbai Bandra Kurla Complex from February 5th to the 8th. This will be the first major product upgrade by Case in India. The 9-ton Case 752 vibratory compactor with water cooled engine results in substantial temperature reduction benefiting the customers with longer engine life and lower fuel consumption. The machine layout with the new engine also provides better access to components for servicing, reducing downtime and maintenance costs. "Our endeavour is to consistently upgrade our machines, and our customers' feedback plays a key role in this. We upgrade our machines to ensure the best fuel efficiency in their class, longer life cycle expectancy, and minimal operating costs. The result is our unwavering leadership position," said



Mr. Anil Bhatia, Director Sales and Marketing, Case India. Selling over 3000 units Case leads the vibratory compactors market with proven models such as the newly upgraded tandem compactor 752, the 1107 soil compactor featuring an operating weight of 11.3 T and the 3.2 ton mini tandem 450DX. The Case 752 upgrade will be joined by other new models at the Bauma Conexpo show, as Case unveils its new offering for the Indian market.

Tata Hitachi Launches High Powered Excavator



Tata Hitachi Construction Equipment Machinery Company has planned to increase the market share to 42 percent from the present 37 percent over the next three years by launching new models along with more exports. Mr Rana Sinha, Managing Director of the company said at the launch of the high-powered exca-

vator ZAXIS 220LC. With a large network of service centres, the company is focused to make a difference to the buyer by offering superior quality products with high fuel efficiency and low maintenance cost with quality services. This will help us to gain a bigger share in a market with increased competition from multi-national corporations. coming up with products and aggressive pricing adding to the competition. The country's construction equipment market, now estimated to be about ₹ 22,000 crore, had grown at a compounded annual growth rate of over 30 per cent during the infrastructure boom from 2003 to 2008 and hope to improve from this year as the infrastructure sector starts to pick up again. We have also begun to export to select markets from the new manufacturing base. The volumes will slowly go up. The new product launched at a price of about ₹ 50 lakh is ideally suited for excavation work for construction of roads

and mining-related business. Owners can monitor its performance through its GPS installation," Sinha said.

JLG to Introduce two Articulated Booms in India



JLG Industries introduced two new articulated booms built at its Tianjin factory in China and designed for developing markets such as Asia and India at the bauma China 2012 in Shanghai. The 18RS and 24RS are 18 m (60 ft) and 24 m (80 ft) booms with basic specifications and lighter weights than JLG's equivalent 600 Series and 800 Series booms made in the US. Both models have fixed axles, 360 degree rotation (not continuous), 4WD/2WS and a single 230 kg cage capacity. No jibs are available with the booms. Significant weight reductions also mean that the booms can use smaller engines, with both fitted with Deutz engines: the 24RS uses the same engine as the 600S and the 18RS has the same power plant as the 450 series booms. The 18RS and 24RS models have been made 2000 kg and 4000 kg lighter, respectively, than the 600 and 800 series machines by using a lighter duty knuckle design similar to that found on JLG's E600 electric articulated boom. The machines were going into production soon in Tianjin with availability from March next year. The booms would be sold in China as well as other Asian markets such as Singapore and India, he said.

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INFRASTRUCTURE**POWER****BHEL Accorded Maharatna Status**

Asian power equipment major Bharat Heavy Electricals Ltd (BHEL) has joined the list of elite group of companies that include Coal India, NTPC, Indian Oil Corporation, ONGC and SAIL that were accorded Maharatna status by Government of India. The Maharatna status will give BHEL the freedom to invest up to Rs.5,000 crore in a joint venture or in a wholly-owned subsidiary without government's permission. Heavy Industries Minister Shri Praful Patel had made this announcement on his visit to BHEL's boiler plant at Tiruchirapalli.

Record generation from Rosa Power Plant

Reliance Power net profit has raised to ₹ 266 crore from ₹ 204 core due to record generation from Reliance Power's 1,200 MW Rosa power plant in Uttar Pradesh, J.P. Chalasani, chief executive officer of the company said. The company has posted a 30 per cent jump in net profit for the three months ending December 2012. The company sales jumped to ₹ 1,464 crore against ₹ 457 crore year-on-year while EBITDA soared by 252 per cent to ₹ 493 crore, Reliance Power said. Anil Ambani group has started pre-

commissioning activities of their 3,960 MW Sasan Ultra Mega Power Project and expect it to be commissioned in this quarter.

Tata power targets to achieve 26000 MW by 2020

Tata Power has planned to increase one-fourth of its overall generation capacity by 2020. We have plans of generating 26,000 MW and intend to have a 20-25 per cent contribution from 'clean power sources' which will include a mix of hydro, solar, wind, geothermal and waste gas generation. This was disclosed by Tata Power Managing Director Anil Sardana. Tata Power and Norway-based SN Power's joint venture is developing an 880 MW hydro project in Tamakoshi, Nepal. The joint venture has also bagged the 240 MW Dugar hydro electric project in Himachal Pradesh. The company is focused to develop more hydro projects to reach the landmark.

Jindal Steel and Power bags ₹ 500 crore contract from PGCIL

Jindal Steel and Power has bagged a ₹ 500 crore order from Power Grid Corporation of India Ltd (PGCIL) for supply of 80,000 tonnes of steel, which will be used in setting up two transmission towers in Southern India. JSPL

emerged as the lowest bidder for the order. The company will be supplying rolled back angle sections for tower packages associated with 765 KV d/c current Vamgiri-Khammam Hyderabad transmission line and 765 KV d/c current Nagapattinam-Salem-Madugiri transmission lines. At present the total steel production capacity of the company stands at 3 million tonnes per annum (MTPA) at its Raigarh plant in Chhattisgarh. Besides, it also has a 0.6 MTPA wire rod mill and a 1 MTPA capacity bar mill at Patratu, Jharkhand, and a plate mill to produce up to 5 metre wide plates at Angul, Odisha. The company has chalked out an ambitious growth plan to have 20 MTPA steel making capacity by 2020.

AIRPORT**Two Acres of Land to Expand Chandigarh Airport**

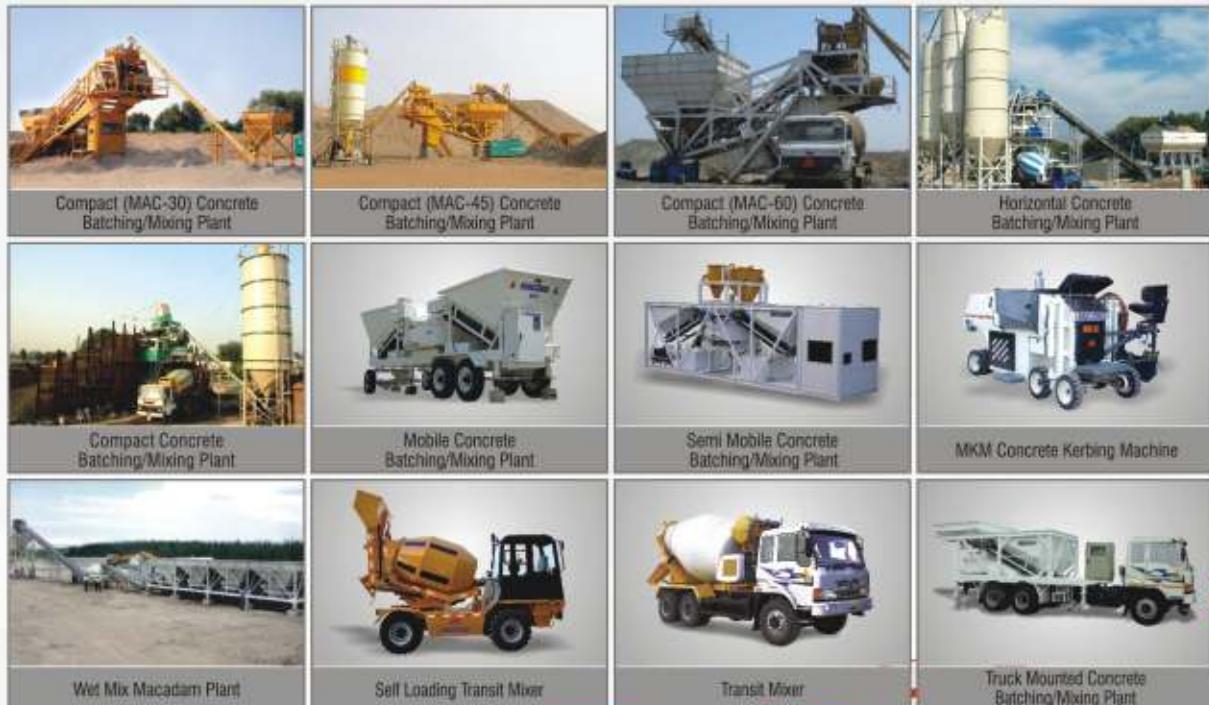
The Army Western Command has agreed to transfer two acres of land to Airports Authority of India for the expansion of Chandigarh airport. The land will be transferred after the Army gets approval from the Ministry of Defence. The decision was taken in a meeting attended by Union Territory (UT) administrator Shivraj Patil and Western Command Lt Gen Sanjiv Chachra. The land offered by the Army Western Command will be utilised to widen the narrow approach road to the existing terminal of Chandigarh airport and create additional parking space outside the civil terminal. Regarding the transfer of Kendriya Vidyalaya land in Sector 47 on lease to the Air Force, the UT promised to ensure early transfer of land.

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INFRASTRUCTURE

New Passenger Terminal at NSCBI Airport in Kolkata inaugurated

The new state-of-the-art integrated passenger terminal at Netaji Subhas Chandra Bose International (NSCBI) Airport in Kolkata was inaugurated on 20th January 2013 by the President of India Shri. Pranab Mukherjee in presence of Chief Minister of West Bengal, Ms Mamtha Banerjee and Minister of Civil Aviation Shri Ajit Singh. The ₹1800 crore modernization project has been executed by the joint venture of ITD Cementation India Ltd. (ITD Cem) with its parent, Italian-Thai Development Public Co. Ltd., Thailand (ITD). The integrated passenger terminal now has a capacity to handle an annual traffic of 20 million passengers (earlier capacity being 7.46 million passengers per annum). The new airport terminal will now have a covered area of 2.33 lakh sq. metres to handle an Airbus 380. An additional 11 parking bays have been added increasing the total number of parking bays to 23. The



integrated passenger terminal departure facilities include 48 international and 80 domestic check-in counters; 38 immigration counters; 23 international and 33 domestic security gates with frisking booths. The arrival area has 40 immigration counters; 26 conveyor belts; 6 customs counters and 18 aerobridges. The integrated passenger terminal can handle 7452 passengers per hour with area per peak hour passenger at 29 sq m in the international terminal and 14.38 sq m in domestic terminal.

Aviation Ministry for transferring Land for Development of Airport in Allahabad



Union Minister of Civil Aviation Shri Ajit Singh has requested Uttar Pradesh Chief Minister Shri Akhilesh Yadav to transfer 50 acres of identified land in Allahabad to Airports Authority of India (AAI) to develop a new Civil Enclave to handle civil airport operations in the City. In a letter written to Shri Yadav, Shri

Singh has stated that given the lack of space, AAI is not able to upgrade the Civil Enclave of Bamrauli Airport at Allahabad as the airport belongs to Indian Air Force. Shri Singh further wrote that the AAI has already made a preliminary study of the surroundings of the airport area and discussed with the Indian Air Force. The site measuring approximately 50 acres has been identified south of the airfield for development of new Civil Enclave. The new Civil Enclave will include new Terminal Building, Apron to park civil schedule flights, Link Taxi Track, Car Park, etc. Pointing out that Allahabad is one of the major cities of Uttar Pradesh and also has significant potential to enhance religious tourism, Shri Singh stated in the letter that the development of Bamrauli Airport will go a long way in development of eastern region of the State and also adjoining areas of Madhya Pradesh. The letter further states that in case of any difficulty in acquisition and transfer of identified land, an alternative

location having an area of 50 acres may be acquired and handed over to AAI at the earliest, as a number of representations have been received for development of the airport.

Air India ties up with SATS and DTZ



In order to comply with the new ground handling policy issued by the Directorate General of Civil Aviation (DGCA) and to meet the competition posed by the new ground handling agencies, Air India has entered into a Joint Venture (JV) Agreement¹ with M/s. Singapore Airport Terminal Services (SATS) on 50: 50 share holding basis to provide ground handling services to Air India and its client airlines' flights at Bangalore, Hyderabad, Delhi, Mangalore and Thiruvananthapuram, Minister of State for Civil Aviation Shri K.C. Venugopal said. This venture will enable AI-SATS to earn more profit revenue with their international expertise and Air India will share profits with SATS on 50: 50 bases. Air India has not announced any Ground Handling Policy. The government has issued Ground Handling Policy, which is applicable to all airports in India, including Thiruvananthapuram airport. However, the policy is subjudice in the Supreme Court of India, Minister said. As per its approved Financial Restructuring Plan, Air India is required to raise ₹ 5000 crores over a period of ten years through asset monetization. Accordingly, Air India has appointed M/s. DTZ International Property Advisors Private Limited as global real estate consultant to examine its properties in India and abroad and to suggest a road-map for the monetization of the same. The consultant is in the process of identification of the properties.

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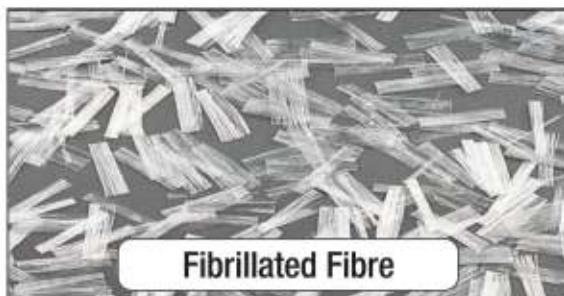
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INFRASTRUCTURE**ROADS****PMC to resume work on Mutha river bed**

The Supreme Court has rejected the Pune based NGO Parisar Society to stay the construction of the remaining 1.5 km road work on Mutha river bed. Pune Municipal Corporation (PMC) general body had decided to develop the riverside road from Mhatre Bridge to Tilak Bridge to ease traffic congestion at Sinhagad Road, Karve Road and the roads in Peth areas and was approved by the state government. PMC submitted to the court that 80 percent of the work is completed and residents have been using the road for the past 12 years. PMC is expected to take up the remaining development work without any hurdle soon.

Revive Stilwell Road to make Nampong a hub for International business

Arunachal Pradesh Governor Gen (Retd) J J Singh has advocated for revival of Stilwell Road, the gateway to South East Asia. He said while speaking at the Pangsa Pass Winter Festival. The opening of the road can transform the economy of Arunachal Pradesh by making it a production hub for feeding the Myanmarese and western Chinese markets. In the absence of road

connectivity with China and South-East Asia, the much-hyped Look East Policy has not brought much benefit to the North-Eastern Region of India. The Governor hoped that once the road is opened, Nampong will be a hub for International business. Stating that at present Jairampur-Nampong region is poised to take off as favourable tourist destination and also as commercial hub in terms of border trade and bilateral commercial engagement with Myanmar in the wake of 'Look East' policy of Government of India, it is imperative that enabling policy decision ought to be taken and implemented by the State and Central governments. He also called for extending of Miao-Namdapha tourist circuit to Jairampur-Nampong-Pangsau Pass region so as to provide the opportunity to develop the tourism potential of the region.

GMR Infra commences commercial operations of NH 9 and NH 13

GMR Infrastructure Limited started the commencement of commercial operations of the Hyderabad Vijayawada section of National Highway 9 and the Hungund Hospet section of National Highway 13. With the commencement of these two projects, the Group has now a portfolio of eight operating highways. The two new projects are expected to generate revenue in the range of ₹ 75 to 80 lakhs per day for the former and ₹ 18 to 20 lakhs per day for the latter. The Hyderabad Vijayawada project was awarded through an international competitive bidding by NHAI on a DBFOT basis with a concession period of 25 years including a construction period of 2.5 years. The four laning of the 181.5 km stretch has been completed as per requirements and also opened for traffic. With the completion of four laning of Hyderabad Vijayawada section of NH-9, the distance of 260 km will be covered in less than 5 hours compared to 6 to 8 hours prior to the construction. Six new bypasses are developed around the towns of Marketpally, Nakrekal, Kodad, Akupamula, Sher Mohammed Peta and

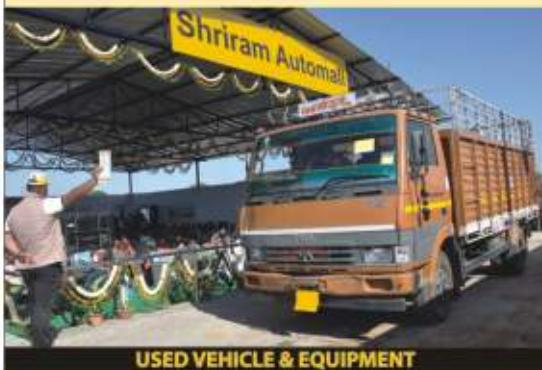
Navabpet which aid in decongesting the towns. Other facilities include service roads on urban stretches of Chittiyala, Choutopal, and Suryapet, Truck lay byes, Bus bays with shelters and Rest areas for road users. Also, 24 Hour ambulance and emergency support services are provided for road users. The Project highway is part of the NH-9 connecting Mumbai/Pune in Maharashtra with Machilipatnam in Andhra Pradesh a vital facilitating east-west traffic movement connecting the two segments (Mumbai Chennai and Chennai Kolkata) of Golden Quadrilateral. The Hungund Hospet section a part of the NH-13 connect Sholapur in Maharashtra and Mangalore in Karnataka. It also links the local industry with Mangalore and Karwar ports for export.

BMC identifies three major roads to implement BRTS Corridor in Mumbai

The Brihanmumbai Municipal Corporation (BMC) has identified the Eastern Express Highway, Western Express Highway and the Jogeshwari-Vikhroli Link Road (JVLR) for BRTS project. The BMC has decided to finance the traffic survey and space inventory for BRTS, Municipal commissioner Sitaram Kunte said. The state government has appointed the Mumbai Transformation Support Unit (MTSU) to prepare feasibility report for the Bus Rapid Transit System (BRTS) project. MTSU will provide data on traffic and space availability to International BRTS expert Pedro Szasz team that will visit Mumbai to study the project implementation. A proposal to appoint a consultant at a cost of ₹ 39 lakh to study the BRTS

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INFRASTRUCTURE

project will be tabled before the standing committee. Under BRTS, separate lanes will be created for public transport vehicles to ease traffic congestions and make public transport safer and faster.



Work on ROB connecting civil lines in Ludhiana resumes



The work of the railway overbridge project linking Civil Lines with the old city localities in Ludhiana had finally resumed. The Y-shaped flyover on completion, will link Civil Lines with Clock Tower, Old GT Road and railway station (up ramp) and Old GT Road through Bhadaur House (down ramp) easing traffic along the existing Domoria Bridge and Jagraon Bridge. The project started in 1997 at a cost of ₹ 13 crore was put on hold due to technical, procedural and financial problems. The project cost is now estimated at ₹ 62 crore due to delay. Northern Railway authorities have closed railway platform four and five till February 4, 2013 for the construction of the portion of the railway overbridge in place of Lakkar Pul. The work has been entrusted to a private agency on overall supervision by railway authorities. The work had been taken to lay pier caps on the supporting pillars from up rank side (Clock Tower side). Once

the pier caps are laid on the area the block will be sought on the next track so that the entire portion of the bridge over the railway tracks is covered in a phased manner. The up ramp from the Clock Tower side is expected to become operational in next two months. Work on down ramp (Bhadaur House side) will commence only after the construction of the up ramp is completed.

DMRC Suggests two Viable Routes for Nagpur Metro



Delhi Metro Rail Corporation (DMRC) has suggested North-South and East-West routes for Nagpur metro rail project. Nagpur Improvement Trust (NIT) chairman Pravin Darade said. The North-South route will start from Kamptee Road Transport Plaza and go up to Mihan. The East-West route will start from Central Avenue, Itwari to Hingna. The project will be executed by the Nagpur Mass Rapid Transit Company (NMRTC) with NIT nodal body for it. The other partners are Nagpur Municipal Corporation (NMC), MIDC and MADC. The cost for the construction of two routes will cost over ₹ 10,000 crore assuming that prices of construction materials in coming years do not vary much from the estimates. A detailed project report (DPR) for both the viable routes will be ready in a fortnight. The most important factor in determining a route is flow of traffic in both directions. After preparation of DPR the state government will approach the central government for assistance. The central government had already promised to provide 50% cost of the project. As per the present plan, the NMRTC will bear 15% of the cost, which comes to Rs 250 crore a year. This will be shared by the

four partners. 60% will be raised by the central government through loan from Asian Development Bank (ADB) and the remaining 25% will come from the state government.

Delhi Airport Metro Express Service Resumes

Reliance Infrastructure-run Delhi Airport Metro Express that connects Connaught Place with Terminal-3 of the Indira Gandhi International Airport is operational after being closed for six months. The train that was running earlier at a speed of 105 km per hour will run at a reduced speed of 50 km per hour. There will not be check-in and baggage facilities for both international and domestic passengers for now. Reliance Metro's Airport Express Line would run daily from 5.30 am to 11.30 pm at a frequency of 15 minutes and will take about 35 minutes to cover the 23-km corridor. Reliance Metro has made arrangements to provide seamless connectivity for Terminal-1 passengers to Aerocity Station through shared cab and shuttle bus services, a Reliance Infra spokesperson said. As a promotional initiative, passengers can travel on the line at a discounted fare of ₹ 30 tomorrow from anywhere to anywhere. On a normal day, the minimum fare is ₹ 20 and the maximum is ₹ 100. The Commissioner of Metro Rail Safety R K Kardam, who inspected the corridor last week, gave the green signal for resumption of service at a reduced speed of 50 km per hour. The speed would gradually be increased after periodic inspections by the Delhi Metro. In addition to single journey tokens, Airport Line has introduced new products in the form of Return Journey Tokens and Sunday /Holiday discount tokens while retaining the Monthly passes for regular commuters. Baggage check-in infrastructure for both National and International travel are in place but the service of baggage check-in would start shortly, the spokesman said. Problems were also noticed in the clippings used in the underground section of the corridor. It is believed that the train speed can be increased only when the clipping issue is rectified.



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REALTY**Budget wish list from CREDAI**

Real estate developers body CREDAI has presented a wish list to the finance minister for the upcoming budget next month. The major demand included an inclusive housing policy and tax incentives. CREDAI suggested allowing tax exemption to small houses of under 60 square metres of carpet area and creation of special housing zones with tax exemption for constructing 45 square metres houses for low income groups and 30 square metre houses for the economically weaker sections similar to strategy followed for SEZ. CREDAI further suggested scrapping RBI risk weightage and appealed for banking reforms making it more business friendly. It suggested facilitating easy and low cost funding for housing in order to encourage developers to increase supply and bring down prices. CREDAI National President Mr Lalit Kumar Jain said the government must take a pragmatic and practical look at the real estate sector under current scenario and take steps to help the industry in particular and the economy in general. He appealed for an Inclusive housing policy and demanded it should be accorded industry status. Affordable housing must be the top priority and the rate of interest for housing loans must be brought down to an acceptable 7.5 percent and the loan should cover 90 percent of the total cost including taxes benefiting property buyers. Government can consider incentives for private sector to promote slum rehabilitation projects. Funds from schemes like Rajiv Aawas Yojana could be made available as slum dwellers' contribution at the rate of ₹ 50,000 per tenement, Mr Jain suggested.

Tata Housing signs MoU for ₹ 5000 crore with Gujarat government

Tata Housing has signed a MoU with the government of Gujarat for investment of about ₹ 5000 crore over a period of 8 years at the Vibrant Gujarat Summit in Gandhinagar. This was disclosed by Brotin Banerjee, MD and CEO, Tata Housing Ltd. The project is expected to cover over 100 acres of land, he added. As part of our long term strategy, we are looking at creating homes in the emerging Tier I and Tier II cities. The company plans to construct sustainable townships for urban dwellers at affordable prices in Ahmedabad being one of India's most desirable cities to live in. The Public-Private Partnership (PPP) model being implemented for this deal will help deliver urban affordable homes to 5 million people in Ahmedabad. Like all other properties of Tata Housing, the projects in Gujarat will be constructed based on the Indian Green Building Council (IGBC) and will be designed to reduce the negative impact on the environment.

Industry bodies oppose Real Estate Regulatory Bill

The Real Estate Regulation Bill drafted by the union government favours only property buyers and it is not suitable for practice, claims realty industry bodies CREDAI and NAREDCO. The union

government had called for a meeting involving six industry chambers including CREDAI, NAREDCO, CII, FICCI, ASSOCHAM and PHDCCI to discuss the draft bill. The meeting was chaired by Minister of Urban Development Kamal Nath and Minister for Housing and Urban Poverty Alleviation (HUPA) Ajay Maken. The government is planning to introduce the bill in the forthcoming budget session. At present, inter-ministerial consultations are on after which Cabinet clearance will be sought. "We opposed the bill in the current form. Bill is not practical and it is one sided, in favour of consumers," NAREDCO President Naveen Raheja said. "We have demanded that all stakeholders in the development of real estate should be brought under the ambit of this bill including government agencies which give clearance to this project," he added. The association sought that all consumer complaints should be addressed to the proposed real estate regulator and no other authorities should attend to their complaints, Raheja said.

CMDA Proposes to Relax Approval of Unauthorised Layouts

The Chennai Metropolitan Development Authority (CMDA) has forwarded a proposal to the Tamilnadu state government to consider relaxing norms for approval of unauthorized layouts in Chennai Metropolitan Area (CMA) and in areas under the jurisdiction of the Directorate of Town and Country Planning (DTCP). As of now, only residential plots registered before December 31, 1989 are approved under the regularization scheme in operation in CMA limits. The state government may likely settle for approving all residential plots registered before July 1, 2007 after levying a penalty. Similar to the process followed in regularization of illegal construction. The state housing department has chosen to work in coordination with municipal administration and rural development departments to find a comprehensive solution to all unapproved residential layouts that have sprung up across the state.

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Gamesa to supply 12 giant turbines to TuuliWatti

Finnish wind power industry pioneer TuuliWatti Ltd is progressing on the implementation of its investment program and to begin large-scale project in Pori, Finland. Gamesa has received an order for 12 of its giant G128-4.5MW turbines from Finnish company TuuliWatti. Eleven of the turbines will be installed in 2013 and one in 2014. The deal marks a breakthrough for Gamesa for its 4.5MW turbine platform, which features a number of innovations such as a two-part blade, a modular set-up to facilitate the installation process and maintenance, and a nacelle-mounted crane. The machines were designed specifically to withstand low temperatures, and will be the largest and highest-capacity turbines installed to date in Finland. Production capacities of 54 MW of new wind farm are a Finnish scale, so far, the largest wind farm



investment. Energy Company St1 and S-S-Force Group joint venture to invest EUR 75 million for construction of a Blanket wind park. The wind farm consisting of twelve 4.5-megawatt wind farm is to be completed by summer of 2014. One plant with a height of 140 meters, a rotor diameter of 128 meters and blade swept area of 1.3 hectares. TuuliWatti goal is to build a 500 MW wind power generation capacity in the coming years. This represents approximately 20% of the Finnish wind power target of 6 TWh in 2020 and 9 TWh by 2025.

Nalco to set up wind power plant in Jaisalmer



Aluminium major, NALCO is setting up its second wind power plant at a cost of ₹ 283 crore in Jaisalmer district of Rajasthan with a capacity of 47.6 MW through Gamesa Wind Turbines Private Ltd, which involves erection of 56 wind turbines each of 850 KW capacity. The project scheduled to be completed in about eight months will be the second green initiative of NALCO towards promoting sustainable development by harnessing unconventional and renewable energy sources.

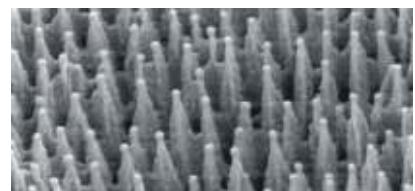
WEL commissions 15 MW solar PV project in Rajasthan

Welspun Energy Limited (WEL) has commissioned a 15 MW Solar PV Project in Rajasthan being the first of the three projects totalling 50 MW that WEL subsidiary had won under competitive bidding for Batch-2, Phase-1 of JNNSM. The projects expected to generate total electricity of 90 million KW annually are coming up in Phalodi Tehsil of Jodhpur District in Rajasthan. WEL has been able to bring the steel tonnage per MW to a record low level. 'This project has been one of many where we have proved that focus on innovation is necessary to gain that extra edge. We are looking forward to becoming change agents for widespread green energy adoption and contributing to India's growth through clean energy.' said Vineet Mittal Co- Founder and MD Welspun Energy Ltd. The first project of 15 MW was awarded at a tariff of ₹ 8.14 per KW. The entire 50 MW capacity is expected to commission much ahead of their contractual schedule of



26 Feb 2013. The project will produce enough energy to light up 2.5 Lakh homes and also reduce carbon emissions to the extent of 78,000 tons every year. Apart from the 50 MW project, the company has also won a 130 MW Solar PV Project in Madhya Pradesh which will be the largest solar project to be developed by any company in India.

Breakthrough in development of high-efficiency solar cells



Scientists at Aalto University have applied atomic layer coating to show a huge improvement in the light absorption and the surface passivation of silicon nano structures. The system reduces the reflectance further at all wavelengths. The use of black silicon (b-Si) surfaces on solar cells increase the efficiency to completely new levels," tells research scientist Päivikki Repo. Black Silicon can be used in other technologies like drug analysis apart from solar cells. The reduced reflectivity provides greater potential for light trapping in the cells. The research is carried out by Aalto University, Finland, together with experts from Fraunhofer Institute for Solar Energy Systems ISE, Germany



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NEWS MAKERS

R. P. S. Kahlon takes over as Chairman, Kolkata Port Trust



Former West Bengal environment Secretary R. P. S. Kahlon took charge as the new chairman of the Kolkata Port Trust (KPT) from January 2, said a Port Trust spokesperson. The post has been vacant since the previous Chairman, M.L. Meena, was transferred to the Finance Ministry early this year. Deputy Chairman of Haldia dock complex Manish Jain served as the acting chairman during this period. Jain will continue as the Deputy Chairman of the dock complex.

Surianello takes over as chairman of ACPA



The American Concrete Pavement Association (ACPA) has named Frank D. Surianello, P.E., CEO and President of Surianello General Concrete Contractors, Inc., Buffalo, New York as its Chairman for the year 2013 replacing Joe Bush, President of McCarthy Improvement Co. The challenge is to inspire innovation and inventiveness so that together we propel

the ACPA and the concrete pavement industry for the next half of a century", he said. He appealed the members to help the association create more opportunities and to be an ambassador for concrete industry. "Inventiveness has always driven our industry," he says, adding, "ACPA was incorporated in 1963, when a group of individuals sensed a need of community coordination that supported their passion for concrete pavements. He cited challenges, including state departments of transportation facing budgetary constraints. If we are to thrive, we must maintain an inspired agenda that will motivate us to innovate and invent. Our agenda must be a simple one, provide our customers with the absolute best product. He said today's innovations become tomorrow's mainstay best practices citing thin concrete overlays, materials enhancements, sustainable practices (including the use of carbon dioxide absorbing mixes; and emerging technologies as examples.

Bertrand Badre to join World Bank



The World Bank has appointed Bertrand Badre as managing director for finance and chief financial officer. He earlier served as the financial head of Societe Generale. Badre will join the duty on March 1, 2013, World Bank President Jim Yong Kim said. Bertrand has deep management experience in some of the largest financial institutions in Europe and has a strong track record and sterling reputation. I am very pleased to have Bertrand

join the bank's management team, where I am confident he will continue to protect the bank's financial strength and maintain our ongoing commitment to effectively safeguard the resources entrusted to us," he added. As the bank's managing director for finance and CFO, Badre will be responsible for all critical internal financial functions and the general services department. This includes the bank's finance operations, control functions, global partnerships and concessional finance, according to the statement.

Vishal Agarwal takes over as Vice Chairman & Managing Director of Visa Steel



Mr. Vishal Agarwal, Managing Director of Visa Steel has been appointed as Vice Chairman & Managing Director in the board meeting held in Kolkata on December 12. Mr. Pankaj Gautam CEO of Bhilai Steel Plant, SAIL earlier has been appointed as Joint Managing Director & CEO of Visa Steel and will be based in Kolkata. Mr. P.R. Bose a member of the board has been appointed CEO (Coke Business). The Board of Directors of Visa Steel include Mr. V. Saran, Chairman (former Director, Raw Materials, Tata Steel), Mr. M.S. Verma (former Chairman, State Bank of India), Mr. S.D. Kapoor (former Chairman, MMTC), Mr. D.P. Bagchi (former Chief Secretary of Odisha), Mr. P.K. Khaitan (Senior Partner, Khaitan & Co.) and Mr. Shanti Narain (former Member Traffic, Railway Board).

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POLICY

Public opinion sought on Coal Mines (Conservation and Development) Amendment Bill, 2012



The central government may increase the maximum amount of excise duty from existing ceiling of ₹ 10 per tonne to ₹ 50 per tonne for all types of coal on introduction of the Coal Mines (Conservation and Development) Amendment Bill, 2012. The proposed amendment has been referred to the Departmental Related Standing Committee (DRSC) on Coal and Steel of parliament for detailed examination and report. The chairman of the committee Shri Kalyan Banerjee, M.P. has invited memoranda containing views/ suggestions from various individuals/experts/institutions/stake holders/organizations on the subject under the Bill. The memoranda can be mailed to com.coals@sansad.nic.in or submitted at Lok Sabha Secretariat within 15 days.

Roll back of iron ore export duty will kill steel industry: ASSOCHAM



Apex industry body ASSOCHAM has cautioned the government against the renewed demand of a section of mining industry for reviewing export duty structure on iron ore. ASSOCHAM in a com-

munication to the steel secretary, Mr D.R.S. Chaudhary has said the structural deficit of iron ore availability for domestic steel industry is owing to an upper cap in iron ore production together with various environmental concerns. The apex industry body hailed the government's policy to conserve natural resources by imposing 30 per cent export duty on iron ore and differential railway freight for domestic and export sector and highlighted that merchant iron ore producers in Odisha are deliberately holding iron ore fines stock and are selling the lumps at ₹ 7,500-₹ 8,000 per ton thereby making wind fall profits. It has also highlighted that merchant miners have adopted a strategy of selling lump only in domestic market and fines in China thereby holding back fines' stock and are quoting abnormally high prices to the pellet producers who are currently struggling to source iron ore fines as the merchant miners are not selling them apprehending that pellet producers will be directly competing with their lump and can thus significantly reduce its prices. Odisha supplies iron ore lump to various sponge iron producers located in Jharkhand, Chhattisgarh and West Bengal.

Industries to pay for water they consume



The union government has planned to introduce 'water returns' on lines of income tax returns targeting big industries. The government has taken up the step in order to have control over the quantity of water consumed by the industries and also keep check of the pollution level. The government has planned to introduce differential rate of pricing of water according to the sector. The annual water returns on similar lines of tax returns would include key parameters like utilisation per unit produce, effluent discharge

details, rain water harvested, water reuse details and fresh water consumption. The National Development Council (NDC) and its broad policy for the five-year period has emphasised that the filing of water returns be made mandatory for big industries and businesses. The system will also promote reuse and recycle of waste water in industry. The policy calls for creating equity and efficiency based water pricing regime for industries. It also asks for overcoming lack of a clear policy framework based on cost-recovery principles.

Real Estate Regulation Bill to be introduced in forthcoming budget session likely



The union government is likely to introduce Real Estate Regulation Bill in the forthcoming Budget session of the Parliament to regulate the real estate sector, Housing Minister Ajay Maken said. The Bill will establish a regulatory authority for enforcing fair practice and accountability norms and fast track dispute resolution mechanism in real estate transactions. He is not positive about introducing Real Estate (Regulation & Development) Bill in the upcoming session. The most important proposal in the draft Bill includes setting up a regulatory authority in every state. Minister said the talks continue with Finance Ministry over raising external commercial borrowing (ECB) limit for affordable housing. At present, RBI has allowed raising USD 1 billion under the ECB route for the affordable housing, he said. Minister said that there is a possibility for fiscal incentive on affordable housing for the poor and LIG (low income group), "he added.



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INTERNATIONAL**Tube completes 150 years of service**

The underground train service Tube has completed 150 years of service on 9 January 2013. It was the world's first subterranean railway. The service that covers a length of 402 km is a triumph of engineering, architecture and above all imagination. Charles Pearson, a City solicitor mooted the idea of constructing an underground train service due to congestion of London's streets in 1845. The underground journey started along the 9.7 km stretch out of the 66.7 km line on 10 January 1863. The Metropolitan line carried 30,000 people on steam-powered trains on its maiden journey. After completion of Circle line new electrified locomo-



tives, new lines and stations including Waterloo & City, Central, Piccadilly, Charing Cross, Euston and Bakerloo were all operational by 1907. Then the railway network got the nickname, the Tube, from 1890 onwards. Both American financier Charles Tyson Yerkes and Frank Pick have made a lasting influence on underground.

ArcelorMittal closes down more production lines in Liege facility

World's largest steel maker ArcelorMittal has decided to close down a coke plant and six production lines in Liege facility in Belgium due to a further weakening of European economy and the resultant low demand for its products. Demand for steel in Europe dropping to 29 per cent below pre-crisis levels as number of key customers in the automotive sector announcing major restructuring projects at their plants. Despite the closing of the liquid phase steel production facility in October 2011, the Liege facility reported an EBIT loss of more than € 200 million for the first nine months of 2012 and no improvement is foreseen in 2013 due to the continued weakness of European

market. The company has proposed to close the hot strip mill, one cold rolling flows, two galvanisation and electro-galvanizing lines each apart from a coke plant. ArcelorMittal would continue to operate the five core lines that are strategic due to their dedicated high quality products, specialized processes and technological innovation.

Blackstone Group LP invests \$482 million in Nantong

Blackstone Group LP, one of the world's largest private equity firms in cooperation with China Resources Land Ltd has made a major investment worth more than 3 billion yuan (\$ 482 million) that involves 600,000 square meters of land in Nantong, an industrial port city at the mouth of the Yangtze River in China. The Ministry of Commerce has given approval for commercial real estate business. Earlier Blackstone had purchased an

office block in Shanghai together with Ting Hsin International Group for around 2.3 billion yuan. The area is located in a third-tier city and the investment should be considered a long-term one, betting on the country's quickened urbanization process, John Zhao, CEO of Chinese private equity firm Hony Capital said. Any investment related to urbanization and consumption upgrading will offer lucrative opportunities for private equity firms and the Nantong deal includes both the factors.

Japan invests in Myanmar to generate electricity from rice husk gas

Japan has invested US \$1.5 million in Myanmar towards the research of converting rice husk gas into electricity. Japan Biofuel Company, Myanmar Biotech Company and the Tokyo Electric Power Company will work together on the project, Chairman Tin Win of the Myanmar Rice Millers' Association said. Out of the allotted US \$1.5 million, New Energy and Industrial Technology Development Organization (NEDO) will contribute over \$1 million, while Biofuel Company will contribute \$450,000. The trial run project will be commissioned at San Pya Rice Mill in the Daydaye Township and Doe Le Tha Mar Rice Mill in Nyaungdon Township. The rice husk gas will be used in the production of high-standard rice and rice products in Rangoon, Pegu and Naypyitaw. The extra electric power will be distributed to nearby villages. The project will be carried out with the support of the Economy, Trade and Industry Ministry of Japan. The Myanmar Rice and Paddy Traders Association and the Myanmar Rice Millers' Association will also cooperate in the project.



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Controlled Demolition & Dismantling of Concrete

Bhavani Balakrishna

Demolition has become a vital part of the Indian construction industry with independent homes and old buildings giving way to new high rises and skyscrapers in several cities. While there are several contractors and companies focused on demolition as well as many more offering this service as part of their portfolio, it has also become an increasingly complex business, requiring a unique combination of project management skills and engineering skills from its practitioners.

Various demolition methods have also evolved and the use of a wrecking ball and crane are fast becoming relics of the past. While some sections of the industry still use sledgehammers, pick hammers, wrecking bars, shovels, and steel cutting torches that can cause dust, noise and vibration, there are others who use boom mounted pneumatic and hydraulic breakers or skid steer loader configured with a hydraulic hammer attachment. However, these machine-mounted breakers can also generate noise, dust and vibration.

One of the safest and eco-friendly methods for controlled demolition; dismantling and selective demolition is diamond sawing. Diamond wire sawing is a non-explosive, non-destructive form of demolition that allows us to cut large sections of heavy reinforced concrete, masonry, steel or rock efficiently and safely where other methods are not feasible. When time and work space are limited, where vibration and impact shock are unacceptable, or where conventional cutting methods are impractical, wire sawing is the per-



fect solution. Wire sawing is the newest cutting technique using diamond tools applied in construction works.

Controlled Demolition & Dismantling through Diamond Sawing

Wire saws were first developed in the stone quarry industry, and diamond wire saws have been used in concrete demolishing work to cut reinforced concrete since the early 1980s. A diamond beaded sawing wire can be wrapped around almost any size or shape of reinforced / mass concrete or masonry structure. The wire is fed through a

"High rise residential & commercial projects in metros and industrial & infrastructure projects in Indian market are regularly using diamond sawing technology because of fast & precise operation while maintaining structural stability."



Shyam Raghunandan
Hilti India

series of pulleys, and tensioned to suit the operator's requirements. Once positioned, the diamond sawing wire is pulled and rotated around the object. This enables the diamond beads attached to the wire to cut the material as it is pulled through. The wire is cooled and flushed by free flowing water at all times. This helps to ensure ease of cutting and minimize overheating whilst in operation. As the wire is pulled through the object, any excess wire is stored on to a series of pulleys and stacked within the looping system. The wire sawing machines are powered by electricity, petrol or diesel.

The real force behind the diamond wire saw is the diamond wire itself a steel carrier cable threaded through steel beads to which diamond is bonded. There are three basic wire types:

- Electroplated beads with compressed steel spring spacers.
- Impregnated beads with compressed steel spring spacers
- Impregnated beads with injection-molded plastic spacing

There are also two main bonding systems for the diamond beads: electroplated and impregnated. Electroplating the wire involves attaching a single layer of diamond to the steel bead. The impregnated bonding system is more similar to the impregnated systems on a circular saw in which a powder metal alloy is blended with diamond, then pressed and sintered to the

steel band, providing multiple layers of diamond for cutting.

Diamond Track/Wall sawing is the fastest and most precise method for cutting openings in concrete structures such as walls, floors and on inclined surfaces. The system consists of a track that supports a travelling saw head, safety guard and a circular diamond segmented blade. The track is bolted

"Indian market per se is passing through a developing Stage in the controlled dismantling technique. In most of the major metro cities, it is adopted when there is no choice left. However various kind of education programs in the form of road shows/product displays/construction tours are being conducted by our organization to make the client/contractor aware."



Manav Goel
Business Head - Construction at TYROLIT India

Controlled Demolition & Dismantling (Diamond sawing)	Traditional
TIME	
Fast Fewer Operators Pre-outage work possible Cuts rebar and other metals in Diamond sawing	Slow, methodical Labor-intensive Pre-outage work not possible Metal cutting required
DIMENSIONAL TOLERANCE	
Precise Cuts Limited patchwork required	Uncontrolled openings Extensive patchwork required
STRUCTURAL INTEGRITY	
Vibration free Ability to remove large amounts of concrete while maintaining structural integrity	High impact vibration causes microfractures of concrete, Potential damage to remaining structures of nearby equipment
NOISE, DUST, DEBRIS	
Non-disruptive to surrounding operations Relatively quiet Pieces cut to size Dust free Large bulk removal capability	Disruptive Loud Creates rubble Extremely dusty Time-consuming clean-up
LIMITED ACCESS	
Remote operations possible Cuts in close space Underwater operations possible Easily cuts around existing pipes	Inflexible equipment Restricted movement Underwater operations difficult or impossible Difficult to work around piping and equipment

to the concrete surface while the saw head and blade are operated by a remote control at a safe distance powered by either an electric or hydraulic motor. The cut is made by the spinning blade progressively being fed into the concrete and making a series of passes over the surface until the required depth is achieved.

Typical Applications

Diamond wire saws can cut concrete of almost any thickness ranging from concrete masses to live sewer pipes as well as underwater piers. This makes them very useful for the kind of heavy demolition found in bridges, dams and thick concrete structures and allows almost any large concrete or masonry structure to be cut where other methods are not feasible. It is an ideal tool for cutting and removing reinforced concrete, such as bridge sections, jetties, columns or beams.

In addition, the process has many advantages including low noise, flexi-

ability, minimal vibration or damage to any retrained structural elements, large depth of cuts and high accuracy of cuts thus making them ideal for demolition work within inhabited structures. Wire sawing benefits customers in any industry by consistently performing in

confined spaces, underwater, and leaving a minimal impact on the environment.

Diamond Track/Wall Sawing main applications are for forming of openings for doorways, windows and ducts. Others are for creating separation joints prior to demolition and cutting openings where the floor saw would find it difficult to gain access.

State of the Indian Market

The Indian market is still developing as compared to the other Western World market. While there is acceptability and adaptability of the technology in some of the major projects, there is still a large chunk of market that is not aware of the significance and benefits of controlled demolition and dismantling as a technology in the construction industry. Another reason for the slow adoption can also be attributed to economics associated with the technology as this is considered expensive vis-à-vis traditional methods. Localization of this technology could to some extent minimize this concern.

The market is comprised of both branded and unbranded players which consists of international players like Hilti, Tyrolit, Husqvarna and also Chinese and Korean Players who do not have defined set up in India and are





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Hilti Wall Saw	DS T 10E	DLP15/TS22	DS TS 20E	DLP32/TS32
Type	Electrical	Hydraulic	Electrical	Hydraulic
Customer segment Cutting depth	Best choice for construction companies & contractor	Best choice for price sensitive contractors	Best choice for contractors who require highest productivity	Best for contractors who are doing extensive sawing application
Cutting depth	38cm	53cm	53cm	73cm
Power	10kw	15kw	20kw	32kw
Application	RCC cutting upto 38cm, Ideal for cutting small windows & door opening	RCC cutting upto 53cm, Slab, beam & wall cutting	RCC cutting upto 53cm, Slab, beam & wall cutting with highest productivity	RCC cutting upto 73cm, ideal for cutting heavy RCC structure in industrial & infrastructure project

Hilti Wire Saw	DS WS 10 E	DS WS 15 E	DS WS 10	DS WSS30
Type	Electrical	Electrical	Hydraulic	Hydraulic
Customer segment	Best choice for small jobs & performance oriented contractors.	Best choice for large jobs & performance oriented contractors.	Best choice for small jobs & price sensitive contractors.	Best choice for large jobs & system oriented contractors.
Cutting length	3 meters	6 meters	2 meters	4 meters
Power	10kw	15kw	10kw	32kw
Application	cutting small beam & column & also cutting opening where access is difficult	Cutting of large & heavy RCC foundation, jetty cutting with high sawing performance	Cutting small beam & column & also cutting opening where access is difficult. Also for under water application	Cutting of large & heavy RCC foundation, jetty cutting. Also for under water cutting

operating through local distributors.

Tyrolit has a range of products for wire sawing for heavy sections cutting irrespective of the desired depths. This technology is steadily being used in most of the infrastructure projects nationwide. Main applications include column cutting, underwater cutting, pile cutting, metal cutting, disaster management and heavy sectioned structures. Tyrolit's wall saws can be used for creating openings of variable sizes for cable trays laying, doors and windows opening, lift walls opening/slab removal/staircase cutting. The company's grooving and grinding applications are meant for concrete highways/runway cutting and ensuring safety for the population in-transit.

After Sales Support

After sales support is a critical success factor in these applications due to low awareness levels and lack of availability of skilled and qualified workers. Most leading organizations like Hilti and Tyrolit provide comprehensive solu-

tion and support to their customers.

Hilti helps customers in planning for an application on-site. It imparts product knowledge including parts & accessories, installation procedure, functions, cutting sequence through demonstrations, technical support and hands-on training through its highly qualified sales engineers. Guidance is also given on aspects like handling of tool components as well as concrete pieces on job-site. The company provides professional repair service through its repair network available across the country. It also has a dedicated customer care handling cell where customers can place orders, get information on deliveries and also give feedback on their experience with Hilti products.

Apart from various education programs, Tyrolit also trains wire saw operators under the TYROLIT India Wire Saw Academy Program. Tyrolit's fleet of application engineers are always available on-site to monitor correct usage of the products and deliver committed

services in terms of application support and training to use these equipment. The company also dons the role of solution provider for its clients and devises cost-economical solutions with its product technologies so that clients can meet their project deadlines.

Every saw comes with a whole list of general power tool safety rules that must be followed. It is necessary to use the hydraulic saw system only for the applications for which it has been designed. One must use correct metal anchors (HKD D) to fix supports or pulley stand. Fixing needs should also be checked at regular intervals during cutting. Correct power and water supply for operation of the saw. Operators have to wear suitable, close-fitting work clothes including a hard hat, protective goggles, protective gloves, safety footwear, ear protectors and a hair net, if the person has long hair. In addition to carrying out the specified care and maintenance, careful cleaning is also a prerequisite for safe, trouble-free operation of the equipment. □



வெப்பத்திலிருந்து விடுபட தீர்வை தேடுபவரா
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மேற்கூரை உண்ணத்திலிருந்து விடுபட விவரங்கள் இருந்தாலும் அவை
தற்காலிகமானதே ஆனால் இக்ளூ டைல்ஸ் குரியினரின் வெப்பத்தை உள்ளவங்கள்
கொள்ளாமல் பிரதிபலிக்கச் செய்கிறது. எனவே உங்கள் தின்மை வெப்பத்
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Hilti: A History of Innovation

Hilti India a 100% subsidiary of Hilti Corporation, Liechtenstein has been a pioneer in construction industry bringing innovative solutions like rebarring, anchoring, coring, and cutting systems. Since its inception in 1997, Hilti has been continuously working on improving construction standards in the country and has introduced products like dust removal systems (DRS); smart power; active torque control and active vibration reduction (DRS). These tech-nological advancements not only save time but also increase productivity.

Hilti Wall & Wire Sawing systems have been developed as the non-explosive method for the controlled demolition of concrete, steel, stone or brickwork structures in construction and civil engineering applications. It can be used for both wet and dry sawing (though the wet sawing technique is more frequently used).

Due to high time and quality pressures in today's construction environ-

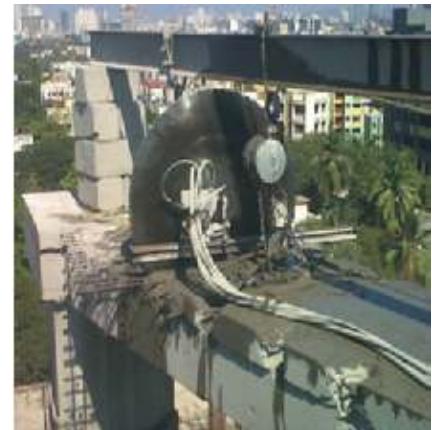
ment, many stakeholders on a jobsite are gradually adopting this highly efficient technology. Based on the customer's application, Hilti offers a wide range of hydraulic and electric wall/wire sawing systems. All Hilti sawing systems are controlled using a remote control unit which offers convenient, safer and efficient operation. The remote control unit is ergonomically designed to suit the needs of every operator and features easy-to-follow symbols and instructions. Another important feature is Traction control which provides optimum cutting output by matching speed and power with steel content in the structure. Hilti offers demonstrations and trainings to its customers through its highly qualified sales engineers who are available on your jobsites whenever required.

Some of the major applications conducted on various jobsites in India by Hilti sawing systems include beam, slab and staircase cutting in residential and commercial projects; hopper and chimney cutting in cement plants and plunge sawing in various other industries like steel mills / steel works, paper and pulp plants, mineral processing facilities and water treatment/sewage treatment plants. This technology also finds vast applications in maintenance and retrofitting works in power plants and refineries.

D-LP32/DS-TS32 wall saw system is proving to be the most efficient, powerful and universal sawing tool available in the Indian market. In conjunction with the WSS30 wire saw kit, the D-LP32/DS TS32 can be used for all wire sawing applications at cutting



Jetty cutting using Hilti wire saw



Beam cutting using Hilti wall saw

depths greater than 73 cm. The D-LP32 together with the DD-750HY also provides a very good hydraulic coring system.

Hilti sawing systems together with the Hilti diamond blades and wires form a matched system that delivers unequalled reliability, performance and productivity. Hilti also offers over-voltage arresters which are designed to protect the sawing systems from the effects of voltage surges (e.g. caused by lightning) which could otherwise damage the electronic components in the system.

Apart from introducing newest sawing technology, Hilti is also pioneer in diamond drilling (coring) and cutting technologies. Hilti offers wide range of core cutting tools; core bits and diamond blades. □

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Issues Related to Successful Implementation of Geogrid Reinforced Soil Retaining Wall

**Som S. Sarkar**

Chairman,
ENVIROGEO® Group, Gurgaon, India

**Ranjana Majumder**

Technical Director,
Enviro Geosynthetics Pvt. Ltd., Gurgaon, India

Adoption of "Reinforced Earth walls" or Mechanically Stabilised structures (MSW) are popular as retaining structures chosen for highways and railways for approaches to R.O.B / Flyover / Underpasses, where conventional slope profiled embankment is replaced by near vertical retaining structures in back to back configuration, to facilitate construction, reduce urban land procurement and attain economy of scale for infrastructure projects. These walls compose of selected soil fill (essentially free draining soil, to avoid pore pressure build up) of granular variety, reinforced with suitable durable soil reinforcement, whose properties are well understood, predictable and proven to perform for the long term (>100 yrs) or in short term (>60 yrs).

Reinforced soil structure is a combination of soil-reinforcement composite encapsulated with a facia and drainage presented as a system. Therefore for obtaining the best performance of such a system, not merely the performance of reinforcement is important, but consideration of the environmental effects, logistic design elements, choice of type and characteristics of soil fill, particle size and their compaction, drainage construction during and after construc-

tion, failure mode of type of reinforcement used, principle governing the behaviour of the reinforced soil, etc are equally responsible for the system performance. Proper formation of soil-grid composite is the key to RE wall performance.

At the starting point of selection, type of RE wall chosen is dependent on reinforcement performance for both ultimate and serviceability aspects of the RE structure. Several kinds of reinforcements are available in market which use various criterion for design, out of which most popular are polymer Geogrids. Properties of these products are well understood today from ultimate failure aspect. From engineering requirement availability of dependable strength over the design life (free from Creep related failure and deformation), durability, construction survivability, soil-reinforcement interaction potential, effect of chemical and environmental degradation etc are carefully evaluated for in-situ performance against ultimate failure based on boundary condition that may prevail. However, RE wall may perform even in the short term not only when the reinforcement is chosen correctly, but also when the installation of the overall system comprising Facia, soil, logistics and system design will be

done as per design requirement. Perceived failure of wall, rather than an actual ultimate failure is most common, they include situations like wall facia bulging, wall leaning forward outside vertical, loosening of facia panel/blocks as tile, sinking of wall toe, etc may indicate serviceability failures. Therefore, the mechanism of soil-reinforcement composite behaviour and correct design procedure and logistics of system chosen are key to the desired serviceability performance.

Importance of Geogrid Integral joint & Dimensional stability

A Geogrid is a standard soil reinforcement adopted worldwide as well as by Ministry of Road Transport & Highways (MoRTH) specification Cl: 702.2, to be used for RE wall. Geogrids are planar structure formed by a regular network of tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock earth. They are characterized by integral junction of longitudinal and transverse elements with high dimensional stability, high strength/ tensile modulus at very low elongation (achieved by advanced processes of orientation of polymer molecules). They are of two varieties, viz., uniaxially oriented and biaxially

oriented with enhanced strength in one or both the directions. Uniaxial Geogrids are primarily used for soil reinforcement for RE wall.

HDPE/PP extruded punched sheet, integrally jointed Geogrids conforms to the true definition of Geogrids, providing ideal junction strength, dimensional stability, oval aperture for optimum interlocking, connection strength to Panel fascia, long term design strength and service life of 120 yrs. The design of Reinforced soil walls for highways require to meet MoRTH specification in India, meeting provisions of BS 8006:2010 and FHWA with seismic load considerations.

Typical problems experienced in RE wall construction

In India RE wall installation for infrastructure project are got executed through specialized agencies in a decade long practiced model, where such agency generally provide design, supply and installation of reinforcement, pre-casting and erection of facia, with supervision guidance. Though manufacturer of Geogrids in India have established reputation and know how in RE wall technology, many other service providers do not manufacture the Geogrids, where they are dealers of imported materials, but claim to have the required experience of wall installation, whose adequacy/performance is controlled by a third party, foreign absentee producer, not involved in these project execution. This creates accountability problems, when quality issues are encountered by the buyer.

In most cases the RE wall earthwork is done by a separate local agency recruited by the main contractor, who mostly does not have the experience or patience for stratified compaction in RE wall. In some cases the main contractor is found lax in ensuring proper supply of fill/adequate and timely compaction/fail to coordinate between Earthwork agency and RE wall agency for a back to back sequential construc-

tion. As most project unfortunately gets delayed, cumulative effect of relaxation of compaction and neglect is later felt on long term performance of the RE wall.

In this current model of project execution, the Technology provider is expected to provide the design and performance guarantee, where as the quality and role of the earthwork contributes to over 60-70% of the performance of the wall, since Geogrid manufacturer is factory controlled. Its time to assess stratified soil grid composite construction as serious business and correct the implementation model by introducing accountable RE wall earthwork, besides ensuring use of quality reinforcement supplied by responsible producer.

Following major problems are experienced in Indian highways/railway RE wall embankments:

- Inadequate facia panel interlocking ability, lack of independent facia movement/freedom
- Installation of RE wall erected out of alignment/specified batter, inclination and level
- RE wall installed without due foundation bearing consideration, excessive settlement
- Poor RE wall serviceability performance due to bulging, tilting or facia peel off
- Distress in embankment due to delay in finished RE wall and delayed pavement installation
- Distress after heavy shower and water ingress in embankment, lack of surface drainage
- High post construction strain in RE wall due to geogrid-panel inadequate junction connection
- Bulging in lower 1/3rd height (Pregnant wall face), due to poor compaction/grid slippage
- Lack of proper drainage media behind facia, incorrect soil use (specifically large particles)
- Effect of delayed of reinforced earth work and poor layer compaction to build the embankment
- Incorrect installation of geogrid/use of improper geogrid or careless compaction of soil

Adequacy in compliance of practice/requirements:

Few key aspects, (besides others factors depending upon the experience of the technology provider), that influences the performance RE wall and it's serviceability aspect, are indicated below:

General system design

In Indian highways and railways, in absence of Indian standards, the current practice of RE wall construction in India adopts following specification / standards for implementing RE wall, some of which if overlooked, may have consequences later:

- RE wall works to follow MoRTH specification (4th Edn) - Ch 3100
- Geogrid specification to conform to MoRTH specification (4th Edn) - Ch 700
- Design of RE wall shall conform to BS 8006-2010, under static loading (Case A,B & C)
- Design of RE wall shall conform to FHWA guidelines for dynamic/seismic analysis
- Design of internal seismic stability must be checked to follow FHWA guidelines
- Design of Panel geogrid connection must be checked to conform to FHWA guidelines
- The Technology providers credentials with performing structures

Adequacy of planning, design and implementation of RE wall

A. Panning

Project authorities to consider that overall RE wall system design comply with:

1. Formulated failure considerations
- a. Serviceability failure limits set by client, if any, such as settlement, facia inclination, post construction

strain of Facia, Safe bearing capacities, service life etc.

b. Ultimate failure limits, such as durability of structure, loading conditions, ambient temperatures, practically implementable and available soil properties,

2. Contractor to ensure availability of resources for design parameters, such as

- Availability of fill soil in required quantity for the entire project, variations etc
- Soil fill properties, C, p, , Ru, Cu, Pl, Max. Particle size distribution, Soil Permeability
- Construction schedule of erection, earthwork, infrastructure for timely compaction
- Availability of safe bearing capacity -Vs- contact pressure, alternative arrangement

3. Use of RCC bed block, proper mix design for early de-moulding of panel/curing/transportation

4. Ensure speed of earthwork, assessment of earthwork volume and schedule to complete such work with specific compaction need in layers between Geogrid layers, construction logistics, timely completion of Crash barrier and pavement, fail-safe installation of geogrid/panel joint.

B. Design

- Analyze design with basic considerations of BS 8006-2010/FHWA/EN ISO standard:

Selection of proprietary RE wall system, conforming to :

- Indian MoRTH specification Cl : 702 and Cl: 3100
- Reinforcing action as per BS 8006-2010 and properties of Geogrid determined in accordance to Annexure-A
- Fill soil selected as per BS 8006-2010
- Junction strength of Geogrid as per FHWA connection requirement
- Selection of Geogrid Properties and past performance, citing conformance to BS 8006-2010
- Conformance of Geogrid properties to:

C. Implementation

In implementation, following considerations determine greatly the performance of the structure:

- Ensuring that the RE wall superstructure is only constructed when in-situ plate load test confirms availability of required SBC against imposed design contact pressure
- The earthwork contractor ensures that correct free draining soil is used in filling
- Soil compaction is done as per quality requirement without large particle size > 80mm
- The earthwork contractor' s ability and inclination to compact soil layers on time
- Essential elimination of delay in soil compaction over installed pre-ten-

sioned Geogrids

- Ensuring correct modified proctor compaction (93-95% at the face and 98% on rest area)
- Essential elimination of ingress of water in the compacted soil-grid composite
- Essential elimination of delay in sealing the compacted RE wall embankment by pavement

Specific attention required in RE wall installation for ensuring performance

For quality construction practice, following consideration of conformance of individual components meeting standards are essential to make RE wall construction a serious business:

1. Facia design

- Articulation of individual segmental panels and blocks
- Ability of facia elements to stay connected to Geogrids
- Ultimate limit state structural design of Panel and it's reinforcement
- RCC Bed block design and suitability from imposed facia load
- Geogrid–Facia connection, method and tested strength criterion
- Panel to panel interlocking and degree of freedom
- Local stability of Block facia- stability against toppling @ hinge height

- Fill soil properties, strictly meeting BS 8006-2010 and design requirement**

- Foundation Safe bearing capacity,

Aspects to consider	Conformance
Quality of Geogrid manufacture	EN ISO 9001
Availability of monitoring quality control data for analysis	EN ISO 9001
Tensile test parameters@ 2%, 5%, and Long term Design load	EN ISO 10319
Junction strength of geogrid	EN ISO 10321
Creep Coefficient derived on the basis of 10000+ hrs test	EN ISO 13431
Installation damage test data and coefficients	EN ISO 10722
Soil-geogrid interaction and pull out test coefficients	EN ISO 12951
Durability data, as per Table-13 & 14 BS 8006-1995, Cl:4.3.4 & 4.3.5	EN ISO 13434
Chemical resistance test data	EN ISO 10390
Environmental resistance test data	EN ISO 13438

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- settlement and drainage for superstructure
- b. Reinforced fill, compaction and particle size limitations, moisture contents
- c. Retained fill, compaction and particle size limitations, moisture contents
- d. Design without pore pressure considerations
- 3. **Geogrid properties, as per BS 8006-2010, and properties of Geogrid as per Annexure-A**
 - a. Involving actual geogrid manufacturer in project execution contract and warranty data
 - b. Geogrid Tensile strength characteristics, checked through accredited 3rd party tests
 - c. Creep coefficients derived from 10000hr+ tests from linear test interpolation data
 - d. Geogrid installation survivability test data for type of soil used
 - e. Durability test results, confirmed by ISO 9001 certified responsible manufacturer
 - i. UV resistance, Environmental Stress resistance
 - ii. Electrolysis and oxidation resistance, Chemical resistance
 - iii. Microbial resistance,
- 4. **Geogrid – soil composite conformance**
 - a. Compaction, degree, extent of vibrations-effect on facia displacement
 - b. In situ use of right soil properties and their influence
 - c. Soil fill placement restrictions
 - i. In situ tests to ascertaining soil fill as per design
 - ii. Maximum/minimum use of Particle size, limitations
 - iii. Compaction equipment limitations, allowances of moisture, degree of voids
 - iv. Availability of surface and subsurface drainage, restricting intrusion of water
 - d. Geogrid soil interaction coefficients
- 1. Geogrid interaction coefficients if affected by inadequate compaction
- e. Logistic safety requirement
 - i. Ensuring correct installation methods as per quality of system provider
 - ii. Ensuring the RE wall top with surface drainage, prevent water ingress
 - iii. Providing drainage gallery for pore pressure dissipation
- 5. **Facia design considerations**
 - a. Facia placement on RCC Bed block (and not on PCC bed blocks)
 - b. Lateral Facia to facia interlocking connection and relative movement
 - c. Facia to Geogrid connection-confirmed by ultimate tests
 - d. Facia top connection to RE wall, below the crash barrier
 - e. Crash barrier seating on Facia
- 6. **Foundation considerations**
 - a. Assessment of contact pressure for each segmental heights
 - b. Adopt ground improvement measures, decide prior to installation of wall
 - c. Choosing an appropriate unyielding foundation for restriction of settlement
- 7. **Pre-casting considerations**
 - a. Select moulds for appropriate shape, based on proprietary system design
 - b. Ensure adoption of mix design for bulk casting and early de-moulding within restricted time as per pre-casting schedule
 - c. Ensure appropriate numbering of panel based on sector wised design in Tiers.
 - d. Ensure curing and stage wise pre-casting and stacking of panels,
 - e. Ensure careful transportation and stacking to ensure identification of panels
 - f. Ensure erection with all accessories in line and level, in between panel tolerances
- 8. **Erection considerations**
 - a. Implement installation of Geogrids without slack and proper connection with panel
 - b. Implement immediate earthwork as per stratified requirement of system design
 - c. Remove delay and inadequate/ excessive compaction in earthwork
 - d. Ensure erection with all accessories and appurtenances, set in line and level
 - e. Ensure corner details in return walls and top panel sizes

Conclusion

Use of RE wall has become large scale practice in India since its inception in Okhla Flyover approaches by Delhi PWD in 1993-94, when first integral Geogrid reinforced soil wall was installed, which bears the successful testimony till today. Innumerable structures are built using integrally jointed HDPE Geogrids, performing satisfactorily in India, besides their worldwide use over last 40 years. RE wall projects started experimenting with other reinforcements like tape, straps, knitted mesh etc. Use of these imported or indigenous tapes/straps/PET knitted meshes with weak woven junction is recent and the user need to understand their long term performance for aspects stated above. It is anticipated that the performance of not all the structures may be found acceptable in the long term, as several systems fail in complying requirements of BS and EN ISO standards and tests listed above. It is time therefore that compliance of listed provisions are implemented by project executing authorities to ensure accountability in performance and contract implementation model may also be reviewed. □

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VOLVO CONSTRUCTION EQUIPMENT



Bauma Conexpo India -2013: 'Back with a Bang'

Chaitanya Raj Goyal

Think Business, think Technology, think Bauma!" Behold the 25,000 visitors (from over 70 countries) who graced it with their presence and the 500 plus equipment manufacturers (from over 35 nations) who exhibited their might at the mega event which was last held at Bandra-Kurla Complex, Mumbai in February of 2011.

Though Bauma is one of the largest and most popular international trade

fairs for the global construction & mining industry, the introduction of a new show in the form of 'bc India' was always a risk - a question for the exhibitors, a question for the visitors. But fortunately and deservedly, all the national/ international exhibitors and visitors who turned up in Mumbai for 'bC India' two years ago had their questions well answered! Rising beyond everyone's expectations with a laudable venue, premium class visitors,

and brilliant business opportunities, the jumbo event really turned out to be a new Gateway to India for the global construction equipment industry, whilst providing a classic platform to the domestic industry for international business development.

As soon as one event comes to a close, it's time to start work on the next: that's the nature of the trade fair business. For Bauma, too, preparations



began for 2013 immediately after the spectacular success of the event in 2011. Hoping to repeat the previous success story, it's just a few more days until the second edition of the Bauma Conexpo show bC India opens its gates with a drum roll yet again at BKC, Mumbai, scheduled from 5th 8th February.

bC India 2013: A Place to be

Bauma Conexpo India 2013 is one of the biggest trade events dedicated to construction industry in the country. The 2nd International Trade Fair for Construction Machinery, Building Material Machines, Mining Machines and Construction Vehicles will gather industry leading organizations, professionals and traders together under one roof. The show aimed at promoting and developing CE sector at an international platform is a joint venture between Messe Muenchen International (MMI), the organiser of the Bauma exhibition in Munich, Germany & Bauma China in Shanghai, and the North America's Association of Equipment Manufacturers (AEM), which organizes the Conexpo event in Las Vegas, USA.

For the information of those who are still oblivious to the glamour of this brand, it may be said that as far as global exhibitions and trade events go for the construction, mining and related industries, there is none bigger than Bauma. Though its inaugural success figures failed to beat those of Excon 2011 (sixth

bC India provides a platform to exhibitors to showcase their product, latest technologies and innovations. JCB being the frontrunner in technological innovation can certainly utilize this stage to present the latest innovations.



Amit Gossain

VP - Marketing & Business Development, JCB

edition), which is India's flagship CE trade fair, it is a global perspective that if you are serious about being in the industry, then you have to exhibit at Bauma. Thus, for many, the bi or tri annual pilgrimage (depending on the country) is looked forward to and the hotel rooms are reserved months, if not years in advance! But this trend which is common to Bauma Germany and now to Bauma China, is yet to pick up in India.

This year, the expectations from the event are much higher, although it will be held on the same Bandra Kurla Com-

plex, owned by the Mumbai Metropolitan Regional Development Authority (MMRDA) that hosted the inaugural bC India. Around 700 exhibitors are expected this time round and there is a total of 150,000 m² of gross exhibition space available, a +70% increase on 2011. The expectation is that around 40,000 visitors will attend the show.

The fair will provide B2B platform for industry peers and trade professionals, to meet, network, discuss various trade issues including latest launches, technology implements, investment tactics and future collaborations. bC India 2013 is hence a must attend event for professionals involved in the construction industry and seeking business prospects across global industry market.

Facts & figures of Bauma Munich, Germany 2010:

The last Bauma Munich, in 2010, attracted 3,256 exhibitors from 53 countries, and over 420,000 visitors from more than 200 countries. The exhibition space covered a total of 555,000 sqm as it became the largest trade show of its kind in the world. (Statistics: E&Y)

Facts & figures of Bauma Shanghai, China 2010:

Bauma China 2010 broke all records with regard to exhibition space sold, exhibitor numbers and visitor numbers. It further consolidated its position as the leading trade show for the Asian con-



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Anand Sundaresan

Managing Director, Schwing Stetter India

struction industry. Attendance figures for 2010 were 1,858 exhibitors from 37 countries and 155,612 visitors from 171 countries. A total 230,000 sqm of space was covered in the event.

Event Insight: Outlook for bC India 2013 is good

The Indian market for construction equipment and building material machinery has been continuously growing for years, and India is getting more and more into focus as an export and investment destination for the international machinery manufacturers.

In the times to come, construction equipment market will largely be driven by the planned development of national infrastructure under the proposed \$ 1 trillion investment according to the 12th Five Year Plan (April 2012-March 2017). Apart from the Mining, Real Estate and other urban development projects which have registered a phenomenal growth over the past few years, the new highway infra projects have provided an amazing boost to the industry in form of multiple lane expressways, stand-alone ring roads, bypasses, grade separators, flyovers, elevated roads, tunnels, road over bridges,



Schwing S36 X

underpasses, and service roads across the country.

The NHAI awarded about 4,375 km of roads in the first nine months of 2012, as against 4,553 kms during 2011, 3,338 km during 2010 and 643 km in 2009. The third quarter of 2012 itself saw about 1,898 km of projects being awarded. The consequence of such massive public and private investments in national infrastructure development for large and fast

track projects has been an increased demand for specialized and sophisticated construction equipment.

The variety of latest technologies which are going to be showcased at bC India 2013, will give visitors the opportunity to compare equipment from Indian and International manufacturers in order to meet the requirements for these kinds of projects.

The launch show in 2011 did an



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impressive job of putting this quality standard to the test. In 2013, the event will again be highlighting themes which will shape the future of building, and which are of outstanding importance for all segments of the construction industry. Many companies have booked more space this time than at the first fair. This further strengthens the hopes and expectations of all those associated with the mega fair.

Clash of the Titans: Exhibitor Profile

The profile for exhibits at the fair includes: Construction vehicles, Earthmoving machines, Road construction and maintenance equipment, Pipe and cable laying equipment and tools, Lifting appliances and conveyors, Equipment for handling and processing concrete and mortar at construction sites, Formwork and scaffoldings, Machines for extraction of raw materials, mining, handling of raw materials and Mineral processing.

Apart from equipment and machines for all around construction sites, mining & material processing, other categories constitute Production of Building Materials and Component & service suppliers. These may include: Manufacture of cement, lime and gypsum compounds for building materials; Machines and systems for producing concrete, concrete products and pre-fabricated components, Machines and plants for producing asphalt, pre-mixed dry mortar, plaster, screed, lime sandstone and building products using power plant residue; Building material handling and packaging, Transmission engineering, fluid tech-

nology and power generation units; Attachments, accessories and wear parts; Test, measurement and process control engineering; Communication and navigation; Job safety, etc.

This year many leading companies in the sector such as JCB have been attracted to bC India 2013 as first-time exhibitors. Many other well-known companies are also taking part for the first time in bC India to join an already strong exhibitor line-up. Other new additions to the roster include Case, Hyundai, Cifa, Ashok Leyland, Mitsubishi Heavy Industries and Shantui.

At bC India, we would be displaying the Complete product range of all 4 brands of Wirtgen group - Wirtgen, Vogele, Hamm and Kleemann. A total of 18 machines would be on display; including our latest product innovations and State of the art machines in a large area of 2006 sqm.



Ramesh Palagiri
CEO and MD, Wirtgen India

Apart from these, a host of global players will be participating including Caterpillar, Fayat Group, Kobelco, Liebherr, Liugong, Mahindra & Mahindra, Manitowoc, Nawa, Putzmeister, Puzzolana, Sany, Schwing Stetter, Tadano, Terex, Volvo, Voltas, Wirtgen, XCMG, Zoomlion-ElectroMech, etc.

The international character of the fair will be underlined through national pavilions expected from China, France, Germany, Italy, Korea, Spain and UK all showcasing state-of-the-art technology produced in their countries. The show will also feature first-time pavilions from Ireland and Japan.

From live demonstrations of equipment for earthmoving & construction, lifting, material handling, concrete making, hydraulics, pneumatics and drills, to a display of power tools & piling equipments, electronics, controls & instrumentation, compactors, and compressors & generators, the fair promises to give a great business opportunity to all the participants. Apart from the participation of major equipment renting companies, leasing and finance companies that offer on the spot loans, visitors can benefit by benchmarking product features of different makes, interacting about their requirements with technical heads, and negotiating deals with chief executives. The event also acts as a forum to position India as an outsourcing destination for components, aggregates and equipment.

Along with the exhibits, bC India is also providing a platform for industry

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leaders to participate in technical and industry oriented programmes to discuss on key issues like equipment financing, technology and skill development and India's ongoing infrastructural growth. There will also be a "Top Buyers Conference", which will discuss issues confronting the Indian construction industry vis-à-vis government regulations.

Who should visit and why?

A point the organizers are keen to stress is the high quality of the visitors to the show. Although in 2011, among the 24,823 visitors who came from 71 countries, nearly 90% were from India, bC

India's own research claims that 92% had some sort of final decision-making authority within their companies.

The targeted visitors at BC India 2013 are: Construction Enterprises, Contractors, Construction Machinery Manufacturers, Construction Machinery Trade and Service-Providers, Construction Machinery Leasing Companies, Building Materials Industry, Mine Owners, Mining Companies, Architects Offices, Engineering Companies, Ministries, Associations, Universities and Research and Development organizations.

The comprehensive product portfolio will provide the perfect opportunity for Indian buyers and international industry leaders. In addition, the show is supported by the Builders' Association of India, India's most important consumer organization for the construction industry.

High Hopes

As the market gears up to the sudden surge of large infrastructure projects, EPC contractors and construction equipment companies are struggling to maintain their order-book growth. Hectic project management, equipment hiring and sub-contracting are leading construction companies to look for technologically advanced and efficient solutions for project execution.

The sector is showing increased interest in ready-made platforms that share technology updates in construction equipment from across the world. Indian and international construction equipment players are hence exhibiting at bC India 2013, to showcase their equipment and attract buyers from the Indian Sub continent.

With the much awaited trade-show happening under the ongoing spell of global and national headwinds, it is expected to lift the construction equipment market including allied products and services out of the grip of slowdown. The emerging economies in the developing countries like India, despite inflation looming large on the horizon, would continue to be the favorite destination of global construction equipment players.

The event has already generated an overwhelming response from all quarters and is set to provide its attendants with a unique union of technology and

business which no one in construction industry would like to miss. The best way to find out this and more is to visit this show yourself! □



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'SHOCK & AWE':

The Ascent of Indian Construction Equipment Industry

The CE industry has a critical role in making India one of the world's top five economies by 2025 and hence the existing market players have an excellent opportunity to help realize the potential of this sector and, in doing so, garner their share of the US\$ 12 -13 Billion revenue potential.

Chaitanya Raj Goyal With Inputs from Knowledgefaber Research and Consulting

In an emerging economy such as ours, economic growth is vastly dependent on investments in the country's infrastructure. In the recent decades, India has witnessed massive investments in the construction industry from both public and private enterprises. To ensure the GDP growth year after year, the Indian government has enhanced the focus on infrastructure projects, as evident from the 12th Five Year plan. As a result, multi-billion dollar investments in constructing roads, ports & power plants, and developing

telecommunication sector & urban infrastructure have paved the way for the construction equipment demand to grow phenomenally.

The Indian government has been increasing the infrastructure investment target by 100% in the last three five year plans. The current target of \$1 trillion, in the 2012-17 phase, will further enhance the market for construction equipment an industry which has witnessed a consistent double-digit growth over the past few years.

Though the economic slowdown had its moderate effects on the industry, it regained momentum in 2010. The investment spend on construction equipment was at around 3-3.5% during the 10th Five Year plan which rose to around 4-4.5% during the 11th five year plan. As the government has now focused efforts on escalating productivity and adherence to timelines in the infrastructure projects, in the 12th plan, the investment spend on construction



equipment is expected to rise to around 5-5.5% which would be spread over the next five years. Overall, the industry experts estimate it to grow by 15-16% CAGR in the next 5 years.

Building up Momentum: Factors that drive the growth

Though there are many factors which determine the 'lucrative ness' of an industry, there are two main factors that make growing construction equipment very likely. First a sturdy growth in the number of large construction projects, with which, heavy construction machinery is without an alternative if companies want to build beyond a certain size. Be it an industrial structure, a power plant, dam, tunnel, major bridge or expressway, neither rises without reaping the benefits of hefty metallic arms. Especially in the tier I and tier II cities, many new buildings have reached a size, which is impossible to build without the help of professional equipment.

The second factor is time. The more the construction sector is professionalized, the shorter the schedules become. Manual labor may still be cheaper, but it will always consume more time, which is something that especially the big contractors are not willing to comprise on.

Furthermore, there are some major segments, which make special contribution to the overall growth of this industry. Earthmoving segment, in particular has been driving the overall construction equipment industry in India, with strong demand emanating from government-backed infrastructure projects. Industry experts say that this segment is expected to register a remarkable CAGR of approximately 21 percent during 2013 to 2017, as per their estimate forecasting a breakup of 70% demand in construction and 30% in mining.

Indian CE Industry: Market Segmentation

According to the industry sources, around 60,000 CE units were sold during 2012 and the figure is expected to touch a mark of 100,000 by 2014. In line with the projected demand, the value of industry is expected to grow to a mam-

moth \$6.5 billion during 2014 with earthmoving sector continuing to make headway and expected to command a value of \$3.7 billion.

The key equipment categories in Indian CE Industry may be fragmented as below:

Earthmoving and Road Construction Equipment: Though both these segments constitute their own individual share to the CE industry, there are a number of equipments common to both.

The earthmoving segment is the largest in Indian CE industry and includes equipment such as: Backhoe Loaders, Excavators, Loaders, Bulldozers, Skid-steer Loaders, Compaction Equipments, Vibratory Rollers, and Haulers. It constitutes a share of approximately 62% of the entire CE market.

Road construction equipments include Bitumen Sprayers, Asphalt Drum Mix Plants, Asphalt Pavers, Road Rollers, Wet Mix Plants, etc. This sector has started picking up, as many construction companies who had run into liquidity crisis are opting for debt-restructuring. This segment accounts for nearly 9-10% of CE market currently and is expected to increase its share further.

Concrete Equipment: Key equipments in this segment include Concrete Breaker, Paver Finisher, Concrete Batching Plants, Concrete Pumps and Rapid Transit Mixers. Various construc-

tion contractors in tier II and III cities are looking for small concrete equipment to achieve greater degree of mechanization while big infrastructure projects are giving rise to demand for higher capacity concrete equipment. With project timelines getting stiffer, ready-mix concrete (RMC) market is expected to grow substantially and the overall outlook for concrete equipment market in India is strong.

A recent report by Knowledgefaber (research and consulting firm), estimates concrete equipment market at \$440 million for year 2012 and predicts a growth rate of 18.0% for coming years. It also states that the concrete equipments account for nearly 9% of the total CE market currently.

Material handling equipment: This includes Telescopic Handlers, Crawler Cranes, Mobile Cranes, Truck Cranes, Forklift, Pick & Carry cranes, Slew Cranes, Tower Cranes and Conveyors. Pick and Carry cranes constitute the major portion of this market.

This sector is expected to register a growth of 15-20 per cent in the next few years. The material handling market in India is estimated to be around 8-9 % of the total CE industry.

Investor's Delight: Deeper engagement of global players

Despite of the fact that the Indian



The earthmoving sector constitutes a share of approximately 62% of the \$ 4.8 billion CE market



Mining sector has progressed at an amazing pace in the past decade: A Liebherr R9400 Mining Excavator in action

market is catered by about 200 domestic manufacturers (small, medium & large), India has only a few, mainly medium and large companies in the organized sector who manufacture such sophisticated equipment. The technology barriers are high, especially with respect to some specific fields like mining, tunneling, etc. and therefore the role of self manufactured equipments is restricted to manufacture of components and some sub-assemblies. But in many other segments Indian firms are strengthening their existing operations for catering to the growing domestic demand and are also planning to expand to tap overseas markets.

Also, since India stands among the top 10 markets for construction equipment and is one of the key international markets many international majors have ambitious plans for India considering that India's per capita number of machines is very low at 13 machines per million compared to 396 in America and 96 in China.

Global players such as JCB from Britain, Hitachi, Kobelco and Komatsu from Japan, Volvo from Sweden and Caterpillar and Terex from the US entered the Indian market during the past two decades, some being very recent entrants. Apart from these giants, Indian CE industry has attracted many other

big firms from China, Finland, Germany, Italy, South Korea, Spain and Turkey to plan assembly and manufacturing facilities in the country. Simultaneously, a number of domestic companies are being seen diversifying their product portfolio through international collaboration and tie-up arrangements. Many international players have also appointed selling agents for importing and selling complete equipment in India.

Technology trends: Still a long way to go

The CE industry in India is trying to bring in international levels of technology as demand and the scale of operation increases.

The level of technology prevalent internationally can be made available in India through joint ventures. However, not all equipments currently being manufactured in India are at par with their international counterparts because the manufacturers do not feel the need to bring in latest technology due to uncertain demand though the companies have the manufacturing facilities and design capabilities to manufacture the same in India.

Some of the other reasons for not manufacturing the latest equipment are:

- The Indian market cannot absorb the cost of the latest technology
- If manufactured in India for export markets, most of the components will have to be imported
- Equipment adhering to the latest emission norms cannot be used since the quality of fuel required for them is yet to be made available here.

It is anticipated that 2-3 years hence, the need for more and more mechanization and enhancement of scale may lead to change in the level of technology in use. These trends are now increasingly noticeable in Backhoe loaders and Material handling equipment manufactured.

Another major lacking of the industry is its poor focus towards R&D. When benchmarked against global companies, the percentage of sales budgeted for R&D ranges from a meager 0.5 to 3% in India.



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Although many of the manufacturers have established full-fledged R&D units to update their products / technologies, the industry in India still does not invest adequately in R&D activities compared to world leaders like Caterpillar or Komatsu, as the existing market cannot absorb the development costs. However, we may witness more R&D work by world majors in India, taking advantage of low R&D manpower costs.

Construction Equipment Financing: Market has huge potential

According to global research firms, the growth momentum of the global CE industry is shifting to emerging markets like India and China from matured markets (North America and Europe), where finance has become scarce and business confidence is low due to slower growth and sovereign debt crisis.

This has made a direct impact on the equipment finance segment, which has received a big boost because of the rising popularity of construction equipment. The current market size of construction equipment financing in India is estimated to be around 30,000 Crore per annum which also includes

many specialist equipment which are imported and get funded through different financial instruments.

CE being a highly capital-intensive industry, companies often seek for equipment financing options, which have longer payback periods at manageable interest rates and which do not disturb the internal rate-of-return (IRR) projections of the projects. Statistics claim that around 85% of the construction and mining equipments purchased are being financed.

Apart from several companies, who are specialized in financing capital intensive heavy industry machinery, there are also instances of construction equipment manufacturers getting into tie-ups with leading finance companies for facilitating financing options for their customers.

Leading banks & NBFCs, including many public sector banks are also participating in this profile considering that ticket size in this business is fairly high. There is also reported growth in the contracting and hiring segment in the semi urban / rural markets which benefits those finance corporations which are present in all these locations.

The equipment sector will continue

to see growth in near future, which will in turn translate into more funding opportunities for the next decade.

Some Targets Met, Missed: Unlocking the Future

Construction equipment market in India is expected to witness dynamic growth in the near future owing to government investments in infrastructure coupled with growing real estate sector.

But as long as labor costs are comparably low, at least smaller firms will shy away from the investments that come with construction equipment and India's highly fragmented building sector still hosts a significant number of these.

Companies therefore, need to adapt on multiple fronts. One of them is collaboration with suppliers; another is improving the competitiveness. This means - to create new products, which suit the Indian customer's demands, and to continuously upgrade the skills of the sales force.

A number of financing solutions are available today in both urban and rural markets

Increasing opportunities for exports is another major area that needs to be worked upon. Conservative estimates



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Special focus needs to be laid on development of and export of 'Made in India' brand to international shores

suggest that "as usual" growth will create a market of \$8 billion by 2015. But a push by the industry and government could result in an additional \$4 billion opportunity equally split between exports and the provisioning of India specific products. However, the increasing competition owing to global product imports from other countries such as China could potentially challenge industry growth and thus needs to be addressed proactively.

The Indian CE industry needs to work towards enhancing the quality, delivery and price of after sales-services; addressing key gaps in financing to catalyze latent demand - particularly in rural areas and small towns;

expanding dealer and channel network coverage to address buyer fragmentation and quality and proactively strengthening supplier capacities and capabilities.

Apart from the contribution and efforts to be made by the market players, the Indian Govt. needs to act quickly on the following in order to ensure a sustainable growth of the industry

- i) Increasing the availability of trained manpower because at the current pace the industry is likely to face a shortfall of 0.3 million trained operators by 2015.
- ii) Removing tax anomalies to encourage exports and lower tax burdens that impede demand.

- iii) Instituting policy measures that strengthen the industry capabilities. Key policy measures include providing tax benefits to players to encourage investments in research and development; establishing an industry focused R&D center; incentivizing exports by exempting them from excise and local levies; and containing imports of used equipment as is done in other emerging market economies.
- iv) Develop a comprehensive roadmap for the introduction of safety and emission norms.

The industry and the government need to work in collaboration to create an enabling environment that results in the desired regulatory changes and export the "Made in India" brand to international shores.

It will not be fair to compare the industry's growth pace in India with that of China as the enabling factors vastly differ. India will continue to grow at its pace and in its own way as decision-making is decentralized and slow unlike in China where it is centrally controlled and quick.

The CE industry has a critical role in making India one of the world's top five economies by 2025 and hence the existing market players have an excellent opportunity to help realize the potential of this sector and, in doing so, garner their share of the US\$ 12 -13 Billion revenue potential. □



A number of financing solutions are available today in both urban and rural markets



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CE: MOVERS & SHAKERS

Events in CE Industry that Made Headlines in 2012

M.K. Prabhakar, Associate Editor

The India growth story of the past two decades has been one of the most compelling growth stories in modern history. One of the highlights of this growth story has been the fact that the country has never witnessed any kind of drastic changes either in modes of governance or in the form of revolutionary upheavals bringing about a change. It is a tribute to the strong democratic traditions of India that it has been able

to maintain a sustained pace of economic growth over this period of time. What this growth story also points out to is the strong fundamentals that are in place that has provided the economy relative immunity from the dramatic ups and downs that are being witnessed elsewhere. One of the factors behind this growth pattern has been undoubtedly the focus on infrastructure development throughout this period and its direct

beneficiary, the construction equipment industry. With investments to the tune of US\$ 1 trillion planned for infrastructure development during the XII Five Year Plan period (2012-17), and with further reform measures forecast, there is every possibility that the Indian construction equipment industry could be the cynosure of all eyes for at least a few more years to come. This being the case, 2012 has been another eventful year for the

construction equipment industry with several key happenings taking place. Let us take a look at some of the major news and events from the construction equipment industry in the year that made headlines.

Setting Shop in India

One of the key indicators of the fact that India continues to be a key growth destination for construction equipment can be gauged from the fact that several top global players continued to set up manufacturing units in the country. Sany Heavy Industry India, the subsidiary of Sany Group which is a global giant in construction equipment announced the inauguration of its first state of the art, fully integrated crawler crane production line in April 2012. The plant located in Chakan, Pune has begun production of all popular models of Sany cranes in the country according to the company's top officials. Sany which holds the world record for manufacturing the largest crawler crane SCC86000TM (3600T) aims to provide superior spares support with less lead time ensuring least down time, maximum availability and faster delivery with the help of the local manufacturing facility.

Kobelco Cranes India Pvt Ltd (KCL), a part of Kobelco Cranes Co Ltd, Japan also announced the commercial production of its hydraulic crawler crane



Sany India has started production in its crawler crane plant in India

manufacturing plant in India in early 2012. The new facility located at Sri City, Tada, Chittoor district, about 100 km north of Chennai is spread over 40,000 sq meters, with the focus being on production of 100T, 150T and 260T class cranes according to the company.

A lot has been happening on the commercial vehicles front too. Commercial heavy vehicles and off-highway trucks are playing a key role in the construction industry. Daimler India Commercial Vehicles (DICV), the wholly owned subsidiary of global commercial vehicle major Daimler, announced the opening

of its state-of-the-art production plant in April, 2012 at Orgadam, a busy suburb of Chennai.

Following suit was Scania Commercial Vehicles whose ground-breaking ceremony for its production unit was held on July 2012 at Narsapura, Bengaluru. According to the company, the new plant will be a completely knocked-down (CKD) assembly unit for truck and bus chassis. The company plans to invest ₹ 2.5 bn over the period of next one year on the new production facility.

Even after all the start of the production lines of these companies, if there was anyone doubting the potential of the Indian construction equipment industry, they found their answer when JCB India late in the year announced its plans for setting up a Rs.500 crore manufacturing unit at Mahindra Lifespace Developers' Mahindra World City (MWC) in Jaipur. To be set up in 70 acres of land, it would be the fourth factory for the construction equipment giant in India.

The Chinese Juggernaut Rolls On

It is no secret that China is the world's largest market for construction equipment. In fact, its market share is about 35% of the total global construction machinery industry. The trend of Chinese companies acquiring others for



Kobelco Cranes India has commenced hydraulic crawler crane production in India



DICV has now got its own manufacturing facility in India

spreading strengthening their global network took another step in 2012, with Sany and XCMG being involved in acquisitions. It has been a trend whose precedent had been set earlier by Chinese companies like Zoomlion, which had acquired CIFA, one of the leading European brands in concrete machinery.

The year also saw an acquisition deal making global headlines. Sany Heavy Industry officially announced the acquisition of global leading concrete machinery enterprise Putzmeister dur-

ing February 2012. Both the brands are expected to leverage each other's strength such as Putzmeister's technological expertise and Sany's global reach to give birth to a new global leader in the concrete machinery industry. The Sany Group announced acquisition of Putzmeister in early 2012. According to Sany Group the acquisition will bring Putzmeister and Sany to a new level, making a new global leader in concrete machinery industry. A few months later XCMG, leading Chinese construction equipment major announced that it has

acquired 52% of the holding rights of Schwing, one of the top brands in the concrete machinery industry.

Closer home in India, Sany continued to make headlines, this time for its tie-up with L & T Finance. Sany Heavy Industry India Pvt Ltd and L & T Finance signed a Private Label Agreement to offer financing assistance to Sany customers. The agreement will help L & T Finance serve the customers of Sany India in a highly personalized and focused manner, according to a release on the occasion by the Chinese construction machinery major.

New launches Galore

Further vindication of the importance of the Indian construction equipment industry was to be had from the number of new product launches that were witnessed in 2012. The focus among suppliers was to come out with products that were fuel efficient as well as environment-friendly. A good example is available in the form of global crushing and screening equipment major, Powerscreen which bought out latest automation and control systems, simplifying the interaction between operator and machine, while also focusing on fuel efficiency and compliance with latest emission legislation. Nawa Engineers, another leading player in the field



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The launch of JCB 3DX

of crushers launched the 'Duracone SRM' model. The Duracone SRM models are extremely user-friendly with a top shell that can be removed or reinstalled in 20 minutes or less, whenever a liner change or other maintenance that call for top shell removal is required, according to the company.

Manufacturers are studying latest

application trends and coming out with product innovations to suit the demands of the local market. An example of product innovation can be found in the form of the VOGELA PowerFeeder MT 3000-2 Offset model with pivoting conveyor from Wirtgen India. The innovative 1.1 wide conveyor can be pivoted to the left or right by 55 degrees and inclined

upwards by 23 degrees, opening up a whole variety of potential application areas.

As expected most of the action took place in the earthmoving equipment segment. They ruled the roost as ever when it came to new launches. Case New Holland Construction Equipment India Pvt Ltd, popularly referred to as Case India launched its SR skid steer range with two models Case SR130 and SR150. With 46hp of engine output and operating capacity of 590kg, the SR130 has an operating weight of 2,270kg. The SR150, with 52hp and operating capacity of 680kg, tips the scales at 2,400kg operating weight.

JCB India launched its all new JCB 3DX backhoe loader, powered by the JCB ecoMAX engine in June 2012. According to the company the benefits that this new generation machine provides to its customers are immense with 20% lower fuel consumption in excavation which will result in fuel savings worth ₹ 2.25 lacs per year at current diesel prices, with what it claims to be the best engine in the construction equipment industry and a spacious, comfortable and



LiuGong launched its 'D'Series excavators in India

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Hyundai launched two '9' series excavator models in 2012

livable cabin because a comfortable operator is a productive operator. The new backhoe loader model is powered by the JCB ecoMAX engine which is a purpose built in house 76 hp engine which is big on fuel savings and high on performance with 16 valve effort; has a twin ram steering for easy steer ability.

With the continued focus on highway projects, it was not surprising to find LiuGong India announce the launch of the CLG 414 BSIII motor grader to add to its array of products. The motor grader offers a new, powerful, water cooled BSIII Cummins engine rated at 112 kW with two power options that allows the operator to select settings, higher power for exceptionally tough jobs or fuel efficiency for simple long-distance grading.

Liugong India also announced the launch of its 'D' Series of hydraulic excavators which according to the company have been completely redesigned and meet Tier 2/Stage II interim emission standards. The CLG920D, compact excavator with 360 degree swing, from



The Bobcat 418 at work

the series is an example of the company's thrust towards offering speedier, efficiency and cost-effective solutions.

Hyundai Construction Equipment India Pvt Ltd (HCEIPL) , a subsidiary of Hyundai Heavy Industries , launched its technologically advanced '9' Series excavator series in the country. The company launched the models 'Robex 220' and 'Robex140' under the series. According to the company the 9 Series excavators provides stability, greater digging, and force along with advanced hydraulics for improved controllability and smoother operation in arduous conditions.

Compact excavators seemed to be the flavour of the season. Another company to join the fray was Doosan Infracore, which introduced the Bobcat MX 418 model in India, a compact excavator that has an operating weight of 1,167 kg and a dig depth of 1.83 metres. The excavator, featuring zero tail swing (ZTS), is ideally suited for working in cramped urban confines, next to buildings or other property and areas where it is difficult to transport equipment.

Telcon too announced the launch of its Tata Hitachi Zaxis 50, a 50 ton class tracked hydraulic excavator. The compact excavator is powered by the noiseless, compact, and efficient 35.5 HP Kubota V2203 engine, which offers greater power, low fuel consumption, low vibration, & quieter operation. □





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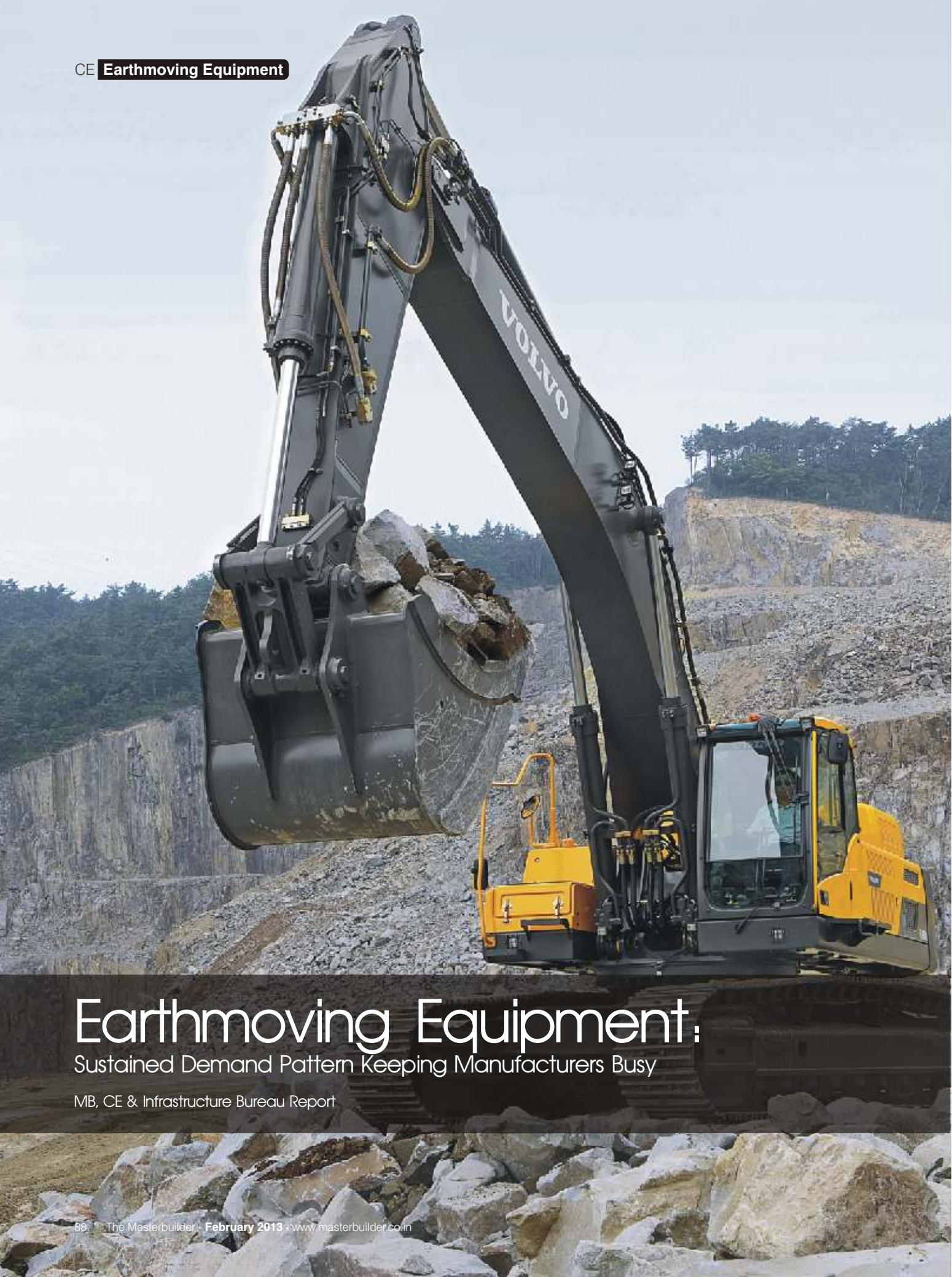


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Earthmoving Equipment:

Sustained Demand Pattern Keeping Manufacturers Busy

MB, CE & Infrastructure Bureau Report

It won't be a misnomer to say that earthmoving equipment is the most crucial market segment among all types of construction equipment. The earthmoving equipment segment's health is often the barometer using which the overall health of the construction equipment industry is measured. The earthmoving equipment industry's share is estimated to be currently over ₹ 6,000 crore, which is roughly half of the total market for the construction equipment industry pegged at around ₹ 12,000 crore in India. All through the economic upheavals it is one market segment that has been able to maintain a steady pace of growth. With earthmoving equipment also being used in a major way in the mining industry, this is one market segment which is being closely watched by almost every leading global player in recent times.

With the government keen on pushing ahead with reforms and with markets expected to respond positively to these initiatives, there are enough indications already to suggest that the second wind which infrastructure development was waiting for is round the corner.

India has emerged as a key market for global earthmoving equipment manufacturers

It won't come as a surprise if earthmoving equipment were to steal the show again during bC India 2013. The renewed fillip to infrastructure works including, roads, airports, irrigation, ports and urban development has come as a shot in the arm for the industry. The earthmoving equipment industry's growth potential can be gauged from the fact that a study by Accenture has pegged the potential of the industry to become a US\$23 billion market by 2020. Apart from infrastructure development, mining is another emerging area that earth-

moving equipment manufacturers are watching with keen interest. As rightly stated by Mr.A.M. Muralidharan, Managing Director, Volvo India Pvt Ltd sometime ago, "As the Indian mining industry grows, we will see both new and the existing mining players offer significant wealth creation opportunities to investors and construction equipment manufacturers," these developments could have a far reaching impact on the Indian earthmoving equipment industry. With the economic situation expected to improve by the year end and the government willing to take calculated risks by pushing ahead with reforms, as in the case with retail in FDI, there are enough indications that the earthmoving industry could be heading for a period of robust growth during the 12th Five Year Plan period (2012-17).

No Looking Back

India continues to be the most im-



When the going gets tough use backhoe loaders seems to be success mantra among Indian contractors

"We will be looking for new markets within India for the various products that we have"



Vipin Sondhi
Managing Director & CEO, JCB India

portant market for backhoe loaders and this truth was not lost on any of the leading manufacturers. Every passing year sees a series of new models of backhoe loaders hit the Indian market. The situation is expected to be the same come bC India 2013 with several new or upgraded models expected to rule the roost during the trade show. JCB India with its range of backhoe loaders including the 2DX, 3DX, 3DX Super, 3DX Xtra and 4DX models continued to rule the roost. Manufacturers are looking to enter hinterlands and further expand their market. Mr.Vipin Sondhi, Managing Director & CEO of JCB India

during the launch of its 3DX backhoe loader model was heard stating, "We will be looking for new markets within India for the various products that we have," a strategy that could rich dividends for the company given its distribution and retail strength that enables it to tap rural markets.

Case India continued to make rapid inroads into the market with its models Case 851, 770, and 7700L. With intensifying competition manufacturers are banking on latest technologies to cater to the needs of an increasingly technology-savvy Indian customer. Case India for example offers a dual stage pump in its 851 model for higher fuel efficiency. Explaining the feature, Mr.Arun Javali, Head- Sales Development, Backhoe division of the company said, "During backhoe operations, considering the requirement of simultaneous operation to facilitate higher productivity this machine is designed with Close Centre Load Sensing System (CLSS) and combined flow of 151LPM @2200rpm by tandem hydraulic pump. However during loader operation the flow requirement is less as the functional attachments are only two i.e. loader arm & loader bucket, hence for optimal and fuel efficient performance; the hydrau-

"As the Indian mining industry grows, we will see both new and the existing mining players offer significant wealth creation opportunities to investors and construction equipment manufacturers"



A.M. Muralidharan
Managing Director, Volvo India Pvt Ltd

lic system utilizes only one pump flow. This mode selection results in higher fuel efficiency." Other big players in fray too have charted their own success paths based on incorporation of latest technologies and features. Good examples being Caterpillar with models such as the '424B', ECEL with its 'Digmax' backhoe loader model, Mahindra & Mahindra Construction Equipment division with its 'EarthMaster' model, Leyland Deere with its '435' backhoe loader and ACE with its AX130 continued to impress with their respective growth stories.

Compact Excavators to the Fore

Another market segment which has been witnessing a flurry of activities off late has been that of excavators. Almost every major player in the field has come out with newer products to cater to the Indian market in recent times. LiuGong India for example, announced its new 'D'Series of hydraulic excavators which according to the company have been completely redesigned to meet Tier 2/Stage II interim emission standards. The company offers a wide range of hydraulic excavators including models such as 906C, 908C, 205C and 225C. Compact excavators are now the flavour of the season in a way. LiuGong India came up with its CLG920D model





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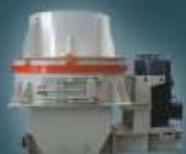
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“During backhoe operations, considering the requirement of simultaneous operation to facilitate higher productivity this machine is designed with Close Centre Load Sensing System (CLSS) and combined flow of 151LPM @2200rpm by tandem hydraulic pump. However during loader operation the flow requirement is less as the functional attachments are only two i.e. loader arm & loader bucket, hence for optimal and fuel efficient performance; the hydraulic system utilizes only one pump flow. This mode selection results in higher fuel efficiency”



Arun Javali

Head- Sales Development,
Backhoe Division, Case India

which offers speedier, efficient, and cost-effective solutions. Offering increased value seems to be the buzzword among manufacturers. As pointed out by Mr. Rohit Punjabi, General Manager- Strategy Development Department of LiuGong India, “One of the major reasons behind LiuGong excavators being a success in the industry today is that LiuGong offers the best value proposition for its customers,” a statement that shows that the Indian market is evolving by the day and suppliers are leaving no stone unturned in offering the best product ‘package’.

Among manufacturers product design and variety seems to be the name of the game. A good example

for a versatile range of excavators can be found in the stable of Hyundai Construction Equipment India Pvt Ltd (HCEIPL), a subsidiary of Hyundai Heavy Industries. The company has already made rapid strides into the Indian market with its ‘Robex’ series of crawler and wheeled excavators, available in a range of capacities. It had recently launched its technologically advanced ‘9’ Series excavator series in the country. The company launched the models ‘Robex220’ and ‘Robex140’ under the series. According to the company the 9 Series excavators provides stability, greater digging and crowd force along with advanced hydraulics for improved controllability and smoother operation in arduous conditions like quarries and mines.

Several global players are now eyeing the rapidly growing Indian excavator market. A case in point is that of Doosan Infracore, a company that is well-known for its range of hydraulic excavators, wheeled excavators, and articulated dump trucks. The company introduced the Bobcat MX 418 model in India, a compact excavator that has

an operating weight of 1,167 kg and a dig depth of 1.83 metres. The excavator is ideally suited for working in cramped urban confines, next to buildings or other property and areas where it is difficult to transport equipment. The machine features zero tail swing (ZTS) with tracks extended.

The market for excavators is rapidly evolving with established players trying to stretch their product portfolio to increase their reach. Telcon, considered an industry leader for a long time now, with its models such as TMX 20, EX70, EX110, EX200iLC, EX210-CCH-V, EX 350 CCH- V Super, EX-1200, EX-1900, EX2500 and EX-3600 added to its already extensive range by introducing the Tata Hitachi Zaxis 50 compact excavator model. The 50 ton class tracked compact excavator model powered by the noiseless, compact, and efficient 35.5 HP Kubota V2203 engine. The 05 Series engines are vertical, water cooled 4 Cycle diesel engines. They incorporate Kubota’s foremost technologies, with E-TVCS (Three Vortex Combustion System), well known Bosch MD type injection pump & well balanced designs,



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thereby giving greater power, low fuel consumption, low vibration, & quieter operation.

Other established players too further consolidated their positions in the market. Volvo Construction Equipment for instance made further inroads into the market with models like Volvo EC380D and EC480D, which are ideally suited for a range of heavy-duty applications including mining, quarry work, civil construction, trenching, hauler truck loading, large scale road building, and mass excavation. Similarly, JCB India continued on its growth path with a wide range of excavators including JS81, JS120, JS140, JS200, JS200HD, and JS210LC. Caterpillar is another major brand offering models ranging from 8 to 90 metric ton capacities as part of its mini, small, medium, and large hydraulic excavators range.

Growth Across the Spectrum

The growth story of earthmoving equipment spanned across

"One of the major reasons behind LiuGong excavators being a success in the industry today is that LiuGong offers the best value proposition for its customers"



Rohit Punjabi

General Manager
Strategy Development Department, LiuGong India

almost every type of construction machinery falling under the category. Skid steer loaders for example, are now becoming a familiar sight across Indian cities and even in rural areas, given their versatile application areas including in infrastructure development, construction sites, and agriculture. Case Construction India had introduced the Case Sr130 and SR150 models to tap this increasingly growing market segment. Similarly, the going was also smooth for wheel loader manufacturers too. LiuGong India continued to make its presence felt with wheel loader models including 835BSIII and 856BSIII. JCB India also offers a solid

range with its 3DX, 430ZX, and 432ZX models. Hyundai Construction Equipment is another player in fray with models in its 'HL' series. Caterpillar is another leading name in fray with its wide range of compact, small, small medium and large wheel loaders.

With highway projects being executed around the country, it was not surprising to find motor graders in demand. LiuGong India had earlier in the year launched the CLG414 BSIII motorgrader, with a water-cooled Cummins engine rated at 112kW for tough highway jobs. Caterpillar is another big name in the field with its 'M', 'K' and 'K2' series of motorgraders. Dozers are another type among the earthmoving equipment which have found favours with Indian contractors. Chetra Machinery India is a good example for a company offering both wheeled and tracked dozer models ideally suited to Indian working conditions.

Digging Deep

The near future of the earthmoving equipment industry hinges on proactive steps by the establishment towards infrastructure development. The demand for excavators in the range of 8-20 tonnes capacity is expected to be steady. Similarly, another distinct trend that has emerged in recent times has been the interest in compact excavators that are ideally suited for working in cramped urban environs, so typical of Indian cities and towns. The market for wheel loaders which is about 3000 units is also expected to maintain a steady growth rate given the gradual increase in scale of infrastructure projects, plus the push being given to mining sector. The growth story of the versatile backhoe loaders is something that is expected to continue for a few more years. With over 23,000 units being sold annually, backhoe loaders will continue to be the most intensely competitive market segment. A period of transition with the focus shifting towards higher capacity machines could be in the offing given the gradual rise in scale of infrastructure projects in the near future. □

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Road Construction Equipment:

Continued Policy Thrust on Road Infrastructure Development Augurs Well for Suppliers

MB, CE & Infrastructure Bureau Report

The road infrastructure sector has been in the news for various reasons in recent times. Despite all the bad press generated by the sector on issues such as corruption, land acquisition, bureaucratic hurdles in clearance of projects, difficulty in finding bidders for certain stretches, etc, the fact cannot be denied that it is one sector that has made rapid strides in the past decade or so. The fact also remains that

successive governments from about the turn of the century have had development of roads on the top of their agenda, irrespective of the ups and downs in the economy, since better roads have a direct relation to the GDP growth rate. It is no different in the case of the present UPA II government too. Prime Minister Dr. Manmohan Singh had recently reviewed the performance of the transport sector in the country. One

of the key decisions taken during the meeting was to award road projects as per the original targets for FY 2012-13 and that the Ministry of Road Transport & Highways will certainly cross 8,000 km of awards this year by March 2013. Another decision that was taken was that road projects of at least 3,000 km will be awarded by OMT (Operations, Maintenance, and Tolling) mode by March, 2013. All these steps along with



the recent positive indicators in the stock markets point out to a period of robust growth for the road infrastructure sector after the lull experienced in recent times. The positive sentiments have kept the buoyancy about the Indian road construction equipment industry intact and it would be among the most competitive market segment during bC India 2013.

Highly Competitive

One of the areas where a lot seems to be happening as far as road construction equipment is concerned is in the field of compaction. There has been a lot of R&D going on in the area and its resultant technologies are now making their presence felt in India. Bomag which has been pioneering the 'Intelligent Compaction' (IC) is represented in India by Greaves Cotton. The technology has been developed by Bomag for soil and asphalt compaction. While for soil compactors Bomag offers an advanced compaction measurement and management system called Bomag Vario Control (BVC), it has also introduced 'Asphalt Manager' similar to BVC which can be used in double drum rollers for asphalt compaction. Greaves Cotton offers a range of compaction equipment which includes models such as single drum vibratory roller BW 212-2(2A), single drum vibratory roller BW 212D-2/2A, tandem vibratory rollers BW 151 ADH-2, tandem vibratory roller BW 120 AD-3 and pneumatic tyred rollers 10t to 24t.

Wirtgen India is an acknowledged market leader in road construction equipment. The company offers the Hamm range of compaction equipment. It produces the 311 Series soil compactor which has been specially designed for the Indian market but featuring German expertise in its plant near Pune. The 311 model features a 3-point swivel joint for optimum driving comfort, hydrostatic steering, and offers optimum ease of maintenance. The Hamm compaction equipment also consists of the Compactor Series 3000, Tandem Rollers HD Compact Line, and Static Rollers Series



On the 'Green' road: Manufacturers are focusing on coming out with models that are fuel efficient, environment-friendly and offer top performance

GRW 280.

JCB India has also got soil compactor model VM 115 and tandem roller model VMT 860 in its stable. The soil compactor for the company features the ecoMAX engine while the heavy duty centre joint and robust chassis translates into excellent stability. The VMT 860 features contemporary design, is fully tropicalized, apart from being protected by a fibre glass canopy. The model features dual frequency to meet varying compaction needs and offers unmatched

operator comfort with rotating operator seats.

Another leading name that has carved for itself with its rollers is LiuGong India. The company's CLG611BSIII roller has been designed keeping in mind the unique working conditions of India. The vibratory soil compactor 614 model from the company features an operating weight of 14000 kg, rated power of 95kW, static linear pressure of 328n and a drum / tire load of 7150/6850kg.

Volvo Construction Equipment is



A Vogelev paver in action



Road rehabilitation is an emerging area in India that offers huge opportunities for suppliers for road construction equipment

one more leading player in the field with its 'Large Asphalt' and 'Large Soil' Series of compaction equipment. While the former features the models DD100 and PT220, the later has the SD110 model. The large asphalt compactors have superior drum widths and high frequency to help with faster rolling speeds and are available with operating weights ranging from 15,000 lbs to 33,810 lbs. The large soil compactors are designed for compacting all types of soils ranging from granular to cohesive.

One more construction equipment major which offers a wide range of compaction equipment is Caterpillar. The company offers durable landfill compactors with operating weights ranging from 36967 kg to 55604kg. Similarly, the Cat vibratory soil compactors offer high compaction performance speed and gradeability and are available in the operating weight range of 7240kg to 18843kg. Cat's range of tandem vibratory rollers come with features such as large double drums for maximum compaction efficiency on any type of mix and are available in the operating weight

range 1485 kg to 12600kg. Cat pneumatic rollers similarly are ideally suited for applications such as compaction of natural soils and materials with lime or cement and are available in the operating weight range of 12940 kg to 27000kg.

Another leading name in the field of compaction equipment is Escorts Construction Equipment (ECEL) which offers vibratory soil compactors ranging in capacity from 10 ton to 12 ton. The models in the range include 2420 and EC 5250. The company also offers tandem vibratory rollers. Similarly, ACE also offers a range of soil compactors, tandem rollers, and mini rollers. Its compaction equipment come with a host of features such as higher applied force, single joystick operation, increased gradeability and reduced fuel consumption, to mention only a few.

World-Class Products

With around 10000 km of highway projects projected to be awarded during 2013-14, it doesn't come as a surprise that India has become a key market for asphalt pavers. The growth story

for the pavers' market segment began in the right earnest during the construction of the Golden Quadrilateral and has continued since then with the gradual entry of several new players. Wirtgen India is considered a top name in this field and offers a range of pavers that are ideally suited for the market here. These machines are easy to operate with control panels equipped with practical language-neutral buttons and switches. Wirtgen offers the Voge brand of both tracked and wheeled pavers. The models under the 'Super Series' of the company include, Super 1100-2, 1300-2, 1600-2, 1800-2, 3000-2, 1103-2, 1303-2, 1603-2, 1803-2, and 1800-2.

Volvo Construction Equipment also offers a wide range of tracked and wheeled pavers under its 'ABG' Series. The ABG tracked paver models ABG 6820, 7820B, 8820B and 9820 are designed for rigorous job sites and are ideally for medium and large scale projects. The ABG wheeled model P4370B has been designed for superior productivity and paving quality.

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paver. The paver with 9.2 metres of paving width comes with enhanced screed features offering superior compaction, resulting in high quality finish and no undulation effect on roads. The features in the paver offers faster operation, better productivity, low and easy maintenance and operator comfort.

Another global major that offers asphalt paving equipment is Caterpillar, which has tracked and wheeled models. Wheeled asphalt pavers from Cat offer superior jobsite mobility for applications that require a lot of paver movement and relocation. The tracked asphalt pavers from Cat come with a host of features including electronic self-diagnostics on the propel and feeder systems to maximize maintenance efficiency and reduce machine downtime.

Road Recycling

With recycling being the buzzword these days the last few years has seen the increased usage of milling machines for applications such as rehabilitation of surfaces or for removing asphalt layers. Wirtgen India is a name that has become synonymous with cold milling machines. The company offers a wide range of cold milling machines, from the small W 35 DC milling machine ideally suited for carrying out partial pavement repairs, milling around manhole covers and placing or removing of road markings to

the power W 2000, which is crawler mounted and used for removal of individual pavement layers or complete carriageway structures at depths of up to 32 cm in one single pass. Bomag is one more brand that offers milling machines. These machine have been brought to India by Greaves Cotton. The machines offer a host of features such as front loading, track mount & steering, and auto control & auto engine power regulation.

Demand across the Board

Almost every type of road construction machinery is now being used in India, with demand projected to increase across the spectrum. Dozers for instance, which are machines that need to be used in order to clear the ground for laying the road in the first place are now a common sight. Chetra Machinery India is a good example for a player that offers both tracked and wheeled dozers. Chetra's crawler dozer models range in capacity from 90 hp to 590 hp. Its wheel dozer range consists of popular models such as the B11 and B25. Motor graders are the other staple of the road infrastructure sector required to clear vast stretches before laying of roads begins. Several major brands are offering motor graders designed for the Indian market these days. LiuGong India for example had in 2012 launched the CLG414 BSIII motor grader with water-cooled Cummins

engine rated at 112kW for tough highway projects. Similarly, Caterpillar offers the 'M', 'K' and 'K2' series of motor graders. The K 2 Series meets Bharat Stage III emission standards and comes with a host of features. Volvo Construction Equipment is another major player in fray with the Volvo G930 and G990 motor grader models. Road marking machines have been also making an entry into the Indian market over the past decade. Aquarius Technologies for instance offers an array of road marking machines from Graco Inc USA in the Indian market ideally suited for airfield, runway, highway, road, zebra crossing, and kerb stone markings.

Optimistic Outlook

It won't be wrong to say that the happenings on the Indian road infrastructure sector could have a direct bearing on the health of the entire construction equipment industry. With road construction equipment and earthmoving equipment both being involved in highway projects in a big way, this is one sector on which everyone's eye's will be focused for the coming few years. With the government expected to come out with steps to ensure fiscal prudence and influx of fresh funds into infrastructure development, the pace of award of road projects is expected to pick up pace right after the budget. In fact, in a recent review meeting Chaired by the Prime Minister, Dr. Manmohan Singh a decision has been taken to award about 8000 km of highway projects by March 2013, a piece of news that is sure to make the spirits of the road construction equipment industry buoyant. Realizing the importance of the road infrastructure sector to the entire economy, the government needs to come out with a series of steps in order to address issues of the road construction industry including, rising input costs, higher wages, and higher interest rates in order to put it on a quicker growth path. The bC India 2013 show could just be the event that could herald a fresh new beginning for the next growth phase of the road construction equipment industry.



Taking on the rough and tumble: motor graders are playing a key role in highway projects



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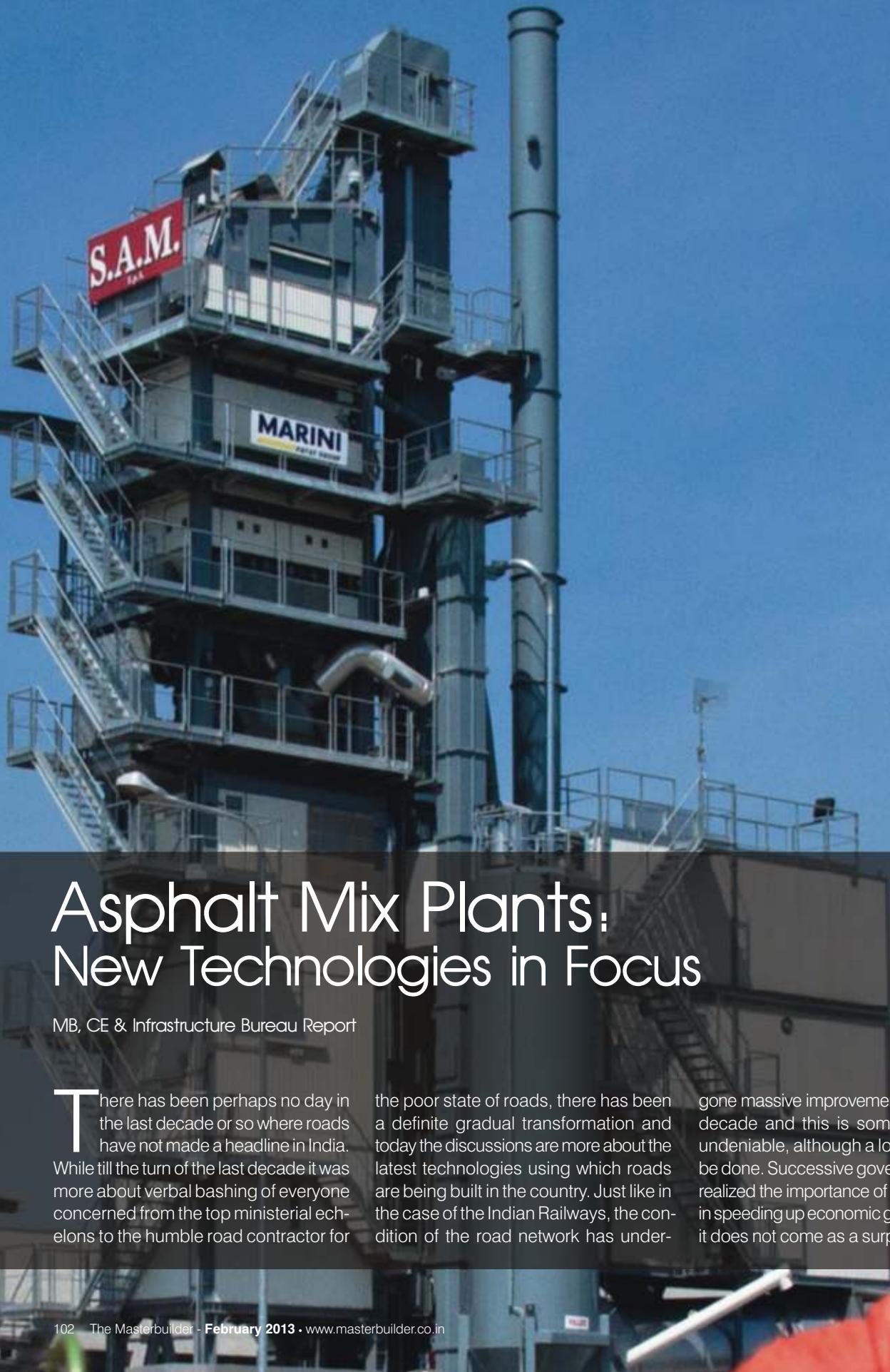


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Asphalt Mix Plants: New Technologies in Focus

MB, CE & Infrastructure Bureau Report

There has been perhaps no day in the last decade or so where roads have not made a headline in India. While till the turn of the last decade it was more about verbal bashing of everyone concerned from the top ministerial echelons to the humble road contractor for

the poor state of roads, there has been a definite gradual transformation and today the discussions are more about the latest technologies using which roads are being built in the country. Just like in the case of the Indian Railways, the condition of the road network has under-

gone massive improvement over the last decade and this is something that is undeniable, although a lot still needs to be done. Successive governments have realized the importance of modern roads in speeding up economic growth rate and it does not come as a surprise that India

has emerged as a pre-eminent market for asphalt mix plants over the last decade.

The fact however remains that what the asphalt mix plant manufacturers have seen is only the tip of the iceberg. One just needs to take a look at a simple statistic to find out the massive pace of development in the recent past. It is estimated that in between 2006 and 2009 the state highway network increased by about 170,000 km while that of National Highways increased by about 4,000 km. The government is also making efforts to convert about 4000 km of single and intermediate-laned roads into two-laned roads by 2014. The government is expected to push ahead with further reforms in order to make highway projects more attractive to bidders, which in turn is expected to give the much needed push to asphalt mix plants in the near future. The next union budget 2013-14 is expected to come out with measures to infuse increased funding into the road development projects. With the positive sentiments that are being generated by the market forces in recent times, asphalt batch plants is one type of construction equipment that will be in focus during bC India 2013.

Recycling Here to Stay

In this day and age of sustainable construction practices it is not surprising to find that there has been a thrust on recycling of old roads in the recent past in India. This push has got a lot to do with the necessary equipment being available now to recycle old roads. Latest generation asphalt mix plants are capable of utilizing existing asphalt in order to lay new roads, without compromising on the quality front whatsoever. Adding to their attractiveness is the fact that these plants are easy to install, operate, and maintain and you have a win-win situation for all parties concerned. The trend is already evident with several major players in fray offer plants that are able to deal with Recycled Asphalt Pavement (RAP). While the recessionary trends in recent times may have impacted the market, there is no denying the fact that manufacturers have used



Asphalt mix plants are playing a crucial role in building world-class roads in India

such technologies to push their products. This is one reason why the growth rate of the asphalt mix plants is expected to maintain the 20%-25% pattern that has established in the recent past, with a few lulls in between. Estimated to be a ₹400 crore market, the asphalt mix plants continue to be one of the key market segments in construction equipment.

Newer Technologies

Apart from the use of RAP there have also been changes in technology being dictated by stricter environment norms. Manufacturers are focusing on coming out with machines that are not fuel guzzlers, while also not harming the environment. Dust particles and emissions that were associated with asphalt plants



Asphalt mix plant



TIL- ASTEC double barrel hot mix asphalt plant

now seem to be from a distant past. The latest models feature a host of features in order to control dust and emissions such as air filtration systems, dust collection systems, and sophisticated waste reduction mechanism. A good example for such asphalt mix plants is available in the range that Marini India

offers. The company offers over 50 different models of asphalt plants, one of the widest ranges in the world. In India, the company offers, mobile asphalt plants in the capacity range of 120/ 160 /200 tph, and modular asphalt plants, in the capacity range of 160/200/ 240/ 320/360 tph, designed for recycled

asphalt production and futuristic mixes. The MAC, Top Tower, and UltiMAP series offered by the company along with the range of asphalt plant systems offered by it have made it a leading name in the industry.

A wide variety of asphalt plants are now available in India featuring different technologies. Apart from the batch mix plants, customers also have the choice to choose from a range of continuous mix plants too. TIL, a leading name in the field of construction equipment for years now in India, offers asphalt plants featuring the double barrel technology. TIL has entered into a strategic agreement with Astec Inc, USA to offer plants featuring this technology. The range consists of plants that are also capable of working with RAP. According to the company the Astec double barrel dryer/ mixer is a combination aggregate dryer and hot or warm mix asphalt mixer with high productivity and low operating cost. The ability of the double barrel drum mixer to run up to 50% RAP at lower fuel consumption is what makes it a winner in today's market where fluctuating fuel and liquid bitumen prices are major factors to consider for road contractors.



Further reforms are expected to bring in additional funding into the road sector and give push to asphalt plant sales

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Model	Max. Working Height (m)	Length (m)	Max. Free Standing Load (t)	Max. Tip Load (t)
JTH10 P5	1,200 / 203	50	34.5	5
JTH10 P6	1,000 / 803	50	45	8
JTH10 P8	1,000 / 803	50	45	8
JTH10 G6	1,000 / 603	50	44	8
JTH10 G8	1,000 / 603	60	44.8	8
JTH10 H10	1,000 / 603 / 2000	60	44.8 / 100.0	10
JTH10 H10	2020	60	59.7	10
JTH10 K12	2020	70	81.7	12
JTH10 K16	2020	70	90.2	16
JTH10 G8	1,000 / 603	84	44	8
JTH10 H12	2,2892.2656	84	87.2	24
JTH10 H12	2,2892.2656	84	87.2	32
JTH10 G12	1,200 / 203	96	97.8	32
JTH10 G16	1,000 / 803	40	26.7	8
JTH10 G16	1,000 / 803	48	28	8
JTH10 P10	1,000 / 603 / 2000	50	26.8 / 106.6	10



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HAPPENSTANCE

With India emerging as a top market for asphalt plants there are scores of overseas players looking to get a foothold here. New partnerships and tie-ups are being forged as the market enters a period of consolidation. Ammann and Gujarat Apollo Industries Ltd (GAIL) for instance have recently signed up for a joint venture which would further strengthen the Ammann brand, considered a global trendsetter in road construction equipment, in the Indian market. Ammann offers a wide range of asphalt batch mix plants and continuous mix plants.

One more overseas player that has established a presence in India with a domestic tie-up is DMI Engineering, a South Korean company, which is represented by Vimtech Corporation. The company offers a range of technology advanced asphalt batch plants. These plants which are modular in design are easy to install and offer portability and fuel efficiency.

Bigger Plants Could Comeback

With the scale of highway projects increasing by the day, the trend is expected to distinctly shift towards plant

in the 200 tph-400 tph range. High capacity asphalt plants were in demand about a decade ago during the construction of the Golden Quadrilateral network, which significantly died down after that. However, with the revival in large scale projects expected in 2013 the market is gearing up for higher capacity plants that also offer portability, ease of installation, operation and maintenance.

The vast size of the Indian market along with the difficulties that are encountered while laying roads in the hinterlands has meant that manufacturers are focusing their R & D efforts towards addressing these issues. With road projects under the Pradhan Mantri Grameen Sadak Yojana (PMGSY) picking up steam the use of latest generation asphalt plants has become imperative. While mobile and semi-mobile asphalt plants are the preferred choice in rural areas, large capacity stationary models continue to be the choice in urban areas. Manufacturers are also focusing on modular designs so that 'plug and play' is all that needs to be done in order to lay world-class roads.

Road Ahead Looks Promising

There have been definite revival signals emanating from the market in recent times that augurs well for the Indian road sector. There has been a positive buzz generated in Indian stock markets after the relative stabilization of the US stock markets in recent times. There are indications that the turnaround of the economy is just round the corner. What this could mean is a spurt in award of road projects that have been delayed or stalled due to lack of funds. With fund infusion expected by mid-2013 major road contractors are hoping that things get kick started in a few months time. This being the case, there is every possibility that the number of asphalt batch plants could be increasing exponentially over the next few years. The market trends are going to be characterized by advent of newer technologies, with the emphasis being as much on relaying roads as building new roads in the near future. This trend is what is going to dictate product features in the coming years. The bC India 2013 trade show offers the perfect platform for witnessing the latest technologies in this field. □



Turkey to Build World's Largest Airport

Turkey has launched a tender to build in Istanbul what aims to be the world's largest airport at an estimated cost of over 7 billion euros (\$11.3b).

The project foresees the construction of a six-runway airport eventually capable of handling 150 million passengers per year, Transport Minister Binali Yildirim said. That would far outpace Hartsfield-Jackson airport in the US city of Atlanta, which is currently the world's busiest with over 90 million passengers likely to have been served in 2012.

Plans are to have operating by 2016 facilities capable of handling some 100 million passengers per year at an expected cost of over 7 billion euros.

Turkish media reported that a number of local and foreign companies including Turkish TAV Airports, partnered with French airport operator Aeroports de Paris, and Dutch airport operator Schiphol Group were interested in bidding to build and operate the airport for 25 years.

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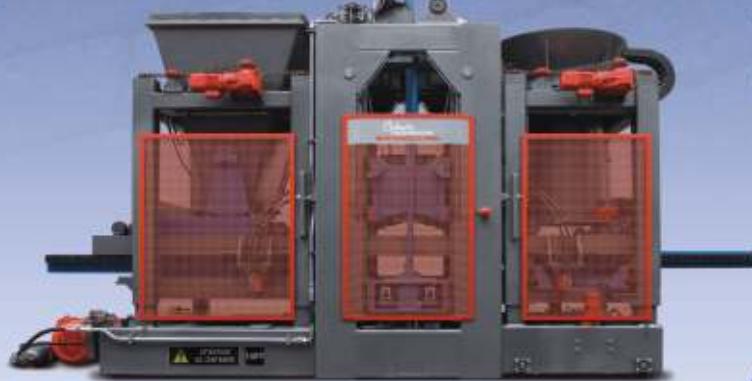
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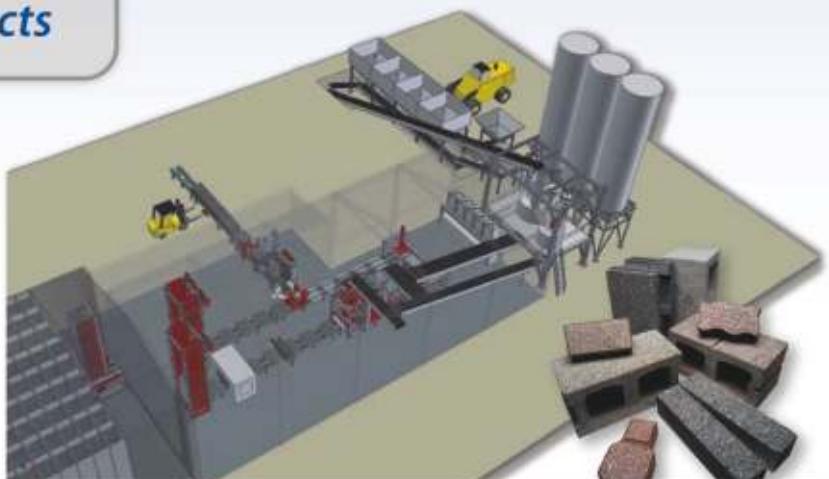


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Medium & Heavy Commercial Vehicles (MHCVs): India Continues to be Marquee Market for MHCVs

MB, CE & Infrastructure Bureau Report

If there is a barometer available to gauge the pace of infrastructure development in India it is perhaps available in the form of the performance of the medium & heavy commercial

vehicles (MHCVs). The market is considered the second fastest growing market in the world. The heavy investment in construction due to the continued emphasis on building the country's

infrastructure, along with the rapid growth of the realty sector has meant that this is one market segment that was always buzzing. Figures from the Society of Automobile Manufacturers

(SIAM) indicate that the growth trend has continued despite the hiccups caused by ups and downs of the economy in recent times. According to SIAM the overall commercial vehicles segment registered a growth of 18.20 percent during April March 2012, as compared to the figures during the previous year. While the MHCVs segment registered a growth of 7.94%, the light commercial vehicles (LCVs) grew at 27.36%. Just to get an indication of the growth trend one just needs to take a look at March 2012's figure where commercial vehicle sales registered a growth of 14.82 percent over March 2011.

The market which was maintaining a hectic pace of growth has suffered in bouts of inactivity in between caused by factors such as economic slowdown, increasing diesel prices and ban of mining in certain areas of the country. However, the fact remains that the growth rate is steady and with the economic indicators showing signals of revival in recent times, manufacturers are focusing on coming out with new models for catering to the diverse requirements here. Several leading names will be showcasing their gleaming new offers come bC India 2013.

Tough Competition

One of the interesting features of the Indian market has been the happenings in the mining sector along with the developments in the construction industry. Manufacturers have been keeping a close watch on the happenings on the mining front when launching new products for the Indian market. With the government expected to announce a series of steps that is expected to open up the mining industry in the near future, equipment that is tailored to the use of mining, along with dual usage capability with the construction industry is an area that is fast picking up. Caterpillar, a global leader in off-highway trucks and construction equipment offers the 770G and 772G models in India. These models have been designed and built for demanding construction, quarry and mining applications. Both these models



Ready for the heavy haul

feature the VIMS system that enables monitoring of data possible. The 770G, in the 40 ton class, incorporates many features to enhance performance and safety and reduce life cycle costs. At the heart of the new truck is the Cat C15 ACERT™ engine, which produces 365 kW (489 hp) and is available with two different emissions control strategies to suit the customer's needs. The 772G in the 50 ton class features an efficient Cat engine and drive train configured to deliver high production and low cost per tonne of material hauled. The 772G comes with retarding strategies that include 'Automatic Retarder Control'

and optional engine braking. Both systems increase the comfort level of the operator and the speed of the truck going downhill.

Another major player in the field of construction equipment which offers specialized haulage trucks for demanding applications from quarrying to mining, tunneling, earthmoving, material handling and waste handling is Volvo Construction Equipment with its 'Artics' concept. The Volvo Artics series features several models including, A25E, A25F, A30F, A35F, A40F, A35EFS, A35FFS, A40EFS, and A40FFS, ranging in load capacity from 24000 kg to



The Cat 770G has been designed for heavy-duty construction and quarrying work

"The world is in an economic downturn but we need to make sure that our performance is equal to or better than that of the competition. We must quickly recognize when things are not going as we expect and do something about it rather than wait too long and find that the road ahead is too steep"



Karl Slym

Managing Director, Tata Motors

39000 kg. Some of the top features of these articulated haulers include self-compensating, hydro-mechanical steering for safety and longer life, 6 x 4 and 6x 6 models for optimized efficiency, wear life and off-road mobility, spacious cabin, and engine hood with swing-down grill platform for easy service, to mention only some.

Intense competition has meant that truck manufacturers are now banking on technology, innovative features, and value additions to sell their products in the Indian market. A good example for such a company is Kamaz Vectra, which offers a wide range of vehicles, including, tippers, cargo, side board trucks, tractor trailers, etc, with different wheel arrangements in various sizes and dimensions including, 4x2, 4x4, 6x4, 8x4 and 8x8 with a GVW up to 120 T. Kamaz Vectra considered one of the largest commercial truck manufacturers in Europe, Russia, and CIS nations has made rapid forays into the Indian market in recent times.

Tata Motors a long established market leader also offers the exclusive 'Con-Truck' range catering to the needs of the construction industry. The range consists of tipper models SK 1616, LPK



1616, LPK 1618 TC 4 x 2 and the 25 ton multi-axle models- LPK 2518 TC 6x4, LPK 2518 HD. This apart, it also offers the popular Prima range consisting of comprising of models like Tata Prima 3128.K and Tata Prima 2528.K. The Tata Prima 3128.K tipper has been specially developed for road construction and

"The market has been extremely volatile but we are hopeful that there would be new initiatives in the areas of infrastructure development, mining and construction that would improve the macro-economic outlook and buoy up sentiments"



Vinod K. Dasari

Managing Director, Ashok Leyland

irrigation projects. With its 270 hp engine and wider body, the model has been designed for smooth movement of earth-work and quarry material. The Tata Prima 2528.K tipper is designed for off-road deep mining applications and features 1,200 x 24 mining tyres and a robust chassis frame, to take on the rigours of quarry work. Cement bulker models from the company include models- LPT 2518 TC, 2518 697 TCIC, LPS 3518 and LPS 4018. With competition fast catching up and the economic upheavals notwithstanding, the Tata Motors is expected to launch a few more models soon, as was evident from future steps talking about which Mr. Karl Slym, Managing Director, of the company recently was recently heard saying, "The world is in an economic downturn but we need to make sure that our performance is equal to or better than that of the competition. We must quickly recognize when things are not going as we expect and do something about it rather than wait too long and find that the road ahead is too steep." Competitors would be keeping a close watch on the company's next steps.

The other market leader, Ashok Leyland too has been aggressively pro-



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Ashok Leyland has a wide range of trucks catering to the construction industry

moving its new models featuring the 'U' truck platform, which find wide ranging application, including haulage in the construction industry. The 4 x2 models that the company offers to the mining and construction sector include, the 1616/1616 XL, 1618 XP, U1616 T and U 1618T. Its range of multi-axle tippers includes the models, 2516Til, 2518il LWB, RMC, U2518il THD, U2523T, 2516 H3/4C RMC, U2518il T Tipper, U2518 T and U3123 T. Models in the series such as U-3123 and U-2523 have been designed for bulk movement of construction materials and take on the demands of high productivity in mining areas. The company is expected to launch new models in the near future. Its optimism stems from the fact that it had registered a 12% increase in turnover at ₹ 6,303 crore during the first half of FY 2012-13, as against ₹ 5,628 crore for the corresponding period in the last fiscal. Airing his views on the future way ahead for the commercial vehicle major, Mr. Vinod K. Dasari, Managing Director, Ashok Leyland had said, "The market has been extremely volatile but we are hopeful that there would be new initiatives in the areas of infrastructure development, mining and construction that would improve the macro-economic outlook and buoy up sentiments," something that every manufacturer would wish comes true.

A versatile range of trucks is on offer with Asia Motor Works (AMW), with its models such as the 2518 TP in the 14 cu.m and 16 cu.m variants and the 2523 TP variants becoming popular across the country. The other tipper models of the company include the 2518 TP Box Body, 2523 TP Box Body, 1618 TP, 3118 TP and 2528TP. AMW also offers specialized trucks for concrete mixers with the model AMW 25518 TP with complete maneuverability and high mixing efficiency. The AMW 2518 CP is for concrete pumps, with features such as a spacious air-conditioned cabin for driving comfort. The HLSA steel chassis is designed for withstanding any terrain from urban construction sites to dams and tunnels. The trucks are fitted with Euro III engines that deliver 180/235 HP power and maximum torque.

Mahindra Navistar Automobiles Ltd (MNAL) is one company that has made rapid inroads into the market with its product variety. Its heavy commercial vehicle range consists of the MN 25 truck, MN31 truck, and MN40 tractor-trailer. Its MN 25 tipper is already popular among the construction fraternity. The company has also been able to leverage its strong sales and service network. Aggressive promotion has meant that the company has already established itself as a leading player in

the market giving even bigwigs like Tata Motors and Ashok Leyland a run for their money. In fact, it has lined up ambitious growth plans for itself in the near future, which in a way also reflects the positive outlook for the industry. The company's Managing Director, Mr. Nalin Mehta had mentioned that, "We are planning to produce 50,000 trucks per year in the next 3-4 years and also launch integrated solutions for the company products by this year-end," a target that it could be well on its way to achieving in the near future given its aggressive marketing strategies.

Another truck maker which offers a wide range of tippers designed for the construction and mining sectors is Man Trucks. Some of its models include CLA 16.220 construction tipper, CLA 25.220 construction tipper, CLA 25.280 construction tipper, CLA 25.280 mining tipper, CLA 31.280 mining tipper, and the CLA 31.280 construction tipper. These tippers range in capacity from GVW 16200 kg to GVW 31000 kg. The tipper

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Dr. Dieter Zetsche

Chairman of the Board of Management Daimler AG

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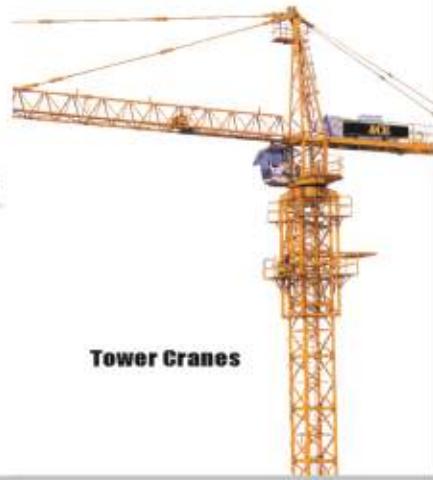
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range is meant for large scale mining and construction projects and has been designed for extreme weather and operation conditions.

New Players Galore

One more name that consolidated its presence in the market is Daimler, which is considered the world's largest manufacturer of medium and heavy duty trucks above 6 tonnes. Their Indian brand, 'BharatBenz' has added to the intensifying competition with its range of trucks from 6 to 49 tonnes across various applications, including construction and mining. The company has set up its manufacturing facility in Orgadam, on the outskirts of Chennai in a record time of about 24 months. The Daimler India Commercial Vehicles Pvt Ltd (DICV) premises is spread over 160 hectares with integrated R & D center. DICV has invested over Rs.44 billion on the project.

The importance of India as a commercial vehicle market was bought out clearly by Dr. Dieter Zetsche, Chairman of the Board of Management Daimler AG and Head of Mercedes-Benz cars who during the plant's inauguration a few months ago stated, "Our new Orgadam-Chennai plant shares Daimler's stringent quality standards with its sister plants around the world and is unique at the same time. It is the only Daimler plant in the world that houses products which combine Indian engineering with

"We are planning to produce 50,000 trucks per year in the next 3-4 years and also launch integrated solutions for the company products by this year-end"



Nalin Mehta
Managing Director,
Mahindra Navistar Automobiles Ltd (MNAL)

German and Japanese DNA under a single roof. This way, we are optimally positioning ourselves for one of the world's strongest and fastest-growing truck markets." The last part of the statement is something that almost every globally reputed name would agree with totally.

The boom in Indian commercial vehicles segment has meant that more and more overseas players are setting up shop here. A good example for a relatively recent entrant making rapid inroads is Scania, which has presence in more than 100 countries. The Scania Commercial Vehicles India offers a spe-

cific range of trucks catering to the construction industry. The company offers the R-420 model tipper for the construction industry. The heavy tipper model, P-380, 8x4 tipper, is designed for coal, overburden, ore and construction materials. Concrete trucks from the company offer a modular system which helps them to be designed for different payloads and applications, whether it is carrying concrete mixers or pumps. The company had recently launched the R 500 6x4, G 460 6x4, P 410 6x2 and P360 4x2 models in India to cater to the on-road haulage segment.

An interesting trend that has been witnessed recently is the initiatives from Chinese companies such as the Chinese Government owned Beiqi Foton Motor Company Ltd and the Shanghai Automotive Industry Corporation Group (SAIC) to set up a commercial vehicle manufacturing facilities in India which could mean further price wars, since the Chinese are known for pricing their products relatively cheaper than others.

The Road Ahead

While there is no doubt in the potential of the Indian commercial and off-highway trucks market, there are certain tricky challenges ahead that the industry needs to surmount. First and foremost there needs to be more pressure put on the government for increasing the capacity and network of world-class roads. It is estimated that over 60% of freight is carried by road in India. The National Highways constitute only about 2% of the entire road network, a stark reality that should act as an eye-opener to the concerned authorities. Adding to the pressure on these roads is the fact that there has been a consistent addition of about 15%-20% of vehicles on them annually in the past decade. Similarly, the powers that be should come out with stringent fuel, road usage and emission control policies and implement them on war footing. As one of the fastest growing markets for heavy commercial vehicles these are a few measures which once implemented could further fuel the Indian success story. □



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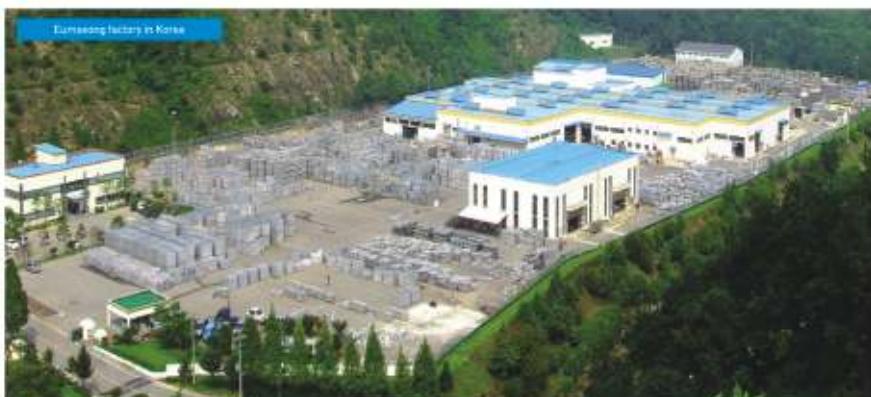


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Formwork Industry: Increasing Emphasis on Quality, Cost-Effectiveness and Sustainability Ensures Steady Growth Rate

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The growth story of the Indian formwork and scaffolding industry makes for interesting reading. It is one market segment among the variety of construction equipment available in India which has been maintaining a steady pace of growth, even

when the market conditions have contributed to the volatility of sales volumes. Slow and steady has been the story of the formwork industry in the recent past. Although the recent recessionary trends have impacted the construction scenario in the country, it is estimated that the

construction industry as such would be able to maintain a steady growth rate hovering around the 13 %-15% mark in the near future, given the positive signals that are emanating from the push to economic reforms in the recent past. The Indian formwork industry's story

has been that of growth and consolidation. The last decade has seen the entry of several leading global players, which is aiding in giving an increasing semblance becoming an organized industry in the near future. While the organized sector only constitutes about 10 % of the industry, there have been gradual improvements in quality standards because of the wider use of modern formwork systems.

The Indian formwork industry is entering a critical phase in 2013. With the government announcing a series of reform measures including the much debated FDI in retail, there is a definite buzz among manufacturers. With the government expected to give further push to reform initiatives, in the forthcoming budget, and the XII Five Year Plan (2012-17) now entering its key phase, the formwork and scaffolding equipment market is expected to get the much needed push in the near future. It is not surprising that given these trends, India continues to be one of the key markets for formwork and scaffolding equipment, with several overseas players trying to get a foothold in the market. Some of the top names in the industry include, Peri, Doka, Meva, Tac System, Kumkang Kind, Sparkonix, etc, to mention only few who have established presence in the Indian market. Several leading players will be showcasing their latest products during bC India 2013, with the equal emphasis expected to be given on offering value added services, apart from the latest technology.

Labour Shortage Issue

There are certain aspects that are unique to the Indian market that are driving forward the growth momentum for the formwork and scaffolding industry. The first key factor is the acute shortage of labour that contractors are grappling with these days. Adding to this pressure is the fact that construction costs are on the rise and in this day and age of lean construction with tight purses, automated formwork systems have come as a boon. Project delays are gradually becoming a thing of the past, thanks to the advent



Providing much needed support: Systems formwork systems have come to the rescue of contractors helping them cut down on project costs and address the issue of labour shortage

of reusable formwork systems. The increase in the size of the projects, especially with respect to infrastructure and high-rise projects has also been instrumental in pushing the demand for formwork. With a majority of infrastructure projects being implemented on a PPP mode, it has become imperative for project owners and investors to complete

projects on time in order to generate revenues. By opting for system/ engineered formwork contractors have realized that substantial savings are ensured, resulting in turn in faster return on investments.

Smaller Cities to the Rescue

While the slow pace of growth of the



Light at the end of the tunnel: Renewed fillip to infrastructure projects could spell boom time for formwork manufacturers

economy, especially in the last few quarters would have set the alarm bells ringing elsewhere in the construction equipment industry, the going has been relatively easier for the formwork and scaffolding equipment segment. This is because with factors such as labour shortage and escalating construction materials contractors are finding that using formwork systems is the way to go. Moreover, industry experts are optimistic that it is only a matter of time before things turn around, given the continued emphasis being provided to infrastructure development. Another key segment that is emerging for formwork and scaffolding manufacturers is the smaller Tier-II and Tier-III towns and cities. With the focus of the realty sector shifting to these smaller urban areas, it is one segment that is being keenly watched by almost every leading player in fray.

Leading global players have been making a beeline for the Indian market given the emphasis on infrastructure development and a rapidly developing interest in high-rise construction projects. Peri India is a good example for a leading global player offering a wide range of products in the country catering to the latest demand trends. Some of the company's product range includes formwork girders, wall formwork, column

formwork, slab formwork, monolithic housing formwork, bridge & tunnel formwork and climbing systems. A few of its top product models include 'Peri Liwa' which is a lightweight type of panel formwork for areas where there are limited crane capacities available, 'Peri Lico' lightweight column formwork and 'Peri Uno' monolithic housing formwork.

Given these factors and the intensifying competition, it is not surprising to find that manufacturers are now offering a packet of value-added services to enhance their market share. A good example can be found in the form of products and services that Doka India offers. The company offers a comprehensive range of services that combine with its products to make high-end complete solutions for every formwork project. Doka's formwork services like consulting, planning, and ancillary services help the customers to achieve effective implementation of their formwork assignment with the products commencing from project development, tendering, operation scheduling, execution, and completion of shell construction. The company which is associated with several prestigious projects such as Mumbai Metro, Ahuja Towers, Mumbai and ONGC Petro Addition Ltd's new petrochemical complex in Dahej,

Gujarat, offers a wide range of products including, Load Bearing Tower Staxo 40, Edge Protection System, Frama Eco and Dokaflex 15, to mention only some.

Top notch quality is the name of the game today and leading players are leaving no stone unturned in offering the latest technologically advanced formwork systems. Yet another good example for a global player in fray in India is MEVA, which offers a wide range of products including, wall formwork, slab formwork, MEVA form set and climbing systems. The company has been associated with prestigious projects including Palais Royale in Mumbai where according to it plywood waste was done away with by introducing an all-plastic, 100% wood-free facing, which is repairable, recyclable and never needs replacing, while delivering superior concrete finish, contributing its might to sustainable construction practices.

Latest formwork systems enable speeding up construction work. A good case in point is the TAC Formwork System offered by TAC System Formwork Sdn Bhd. The system consists of aluminium panels which are pre-designed according to the architectural plans to form all the concrete found in the building superstructure, such as the walls, floor slabs, columns, beams, stairs, window hoods, and curved structures. The TAC System is flexible, lightweight and suits all building types without the need to rely on heavy cranes and other heavy construction equipment. Usually one 'set' of TAC equipment for a typical project would consist of several thousand individual pieces of aluminium sections. According to the company the equipment can be dismantled and be used repetitively for up to 250 repeats and enables construction of building at the rate of 4 to 5 days per floor compared to 10 to 15 days with conventional systems.

Kumkang Kind is another company that offers cutting edge of formwork technology. The company's range of formwork includes aluminium formwork, gang formwork, system formwork, and climbing formwork systems. The climbing formwork system offered by the com-



Aiming high: Almost every leading player is offering automated climbing formwork systems



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Aiding nation building: Systems formwork is here to stay and grow big

pany is not only used on high-rise buildings, but also in mega projects such as bridges, dams, highways, tunnels, stadiums and airport control towers. Kumkang Kind additionally offers precise technical drawing support, along with additional support in the form of rigorous supervision at jobsites. The scaffolding systems from Kumkang Kind are made up of high-strength steel materials with a special galvanizing method to reinforce their durability, making them ideally suited for a variety of construction projects.

Manufacturers are focusing on R & D efforts in order to cater to the rapidly evolving Indian customer. Sparkonix for example offers a range of formwork systems that have designed keeping in mind diverse construction requirements. One of its innovative products is 'Geotub Round', which is exclusively meant for round columns and which can be conveniently handled on site, reused, and stored. Similarly, its 'Geotub' Rectangular and Rectangular are lightweight, modular formwork systems that can be reused. 'Geopanel' systems from the company are used for walls and foundations, among others. The 'Geosky' slab system from Sparkonix is a form of plastic formwork used to pour concrete

slabs. Thanks to its combination of main beam and sliding wedge, this innovative system makes setup and dismantling faster. Some of the other products of the company include, 'Modulo', 'Elevator' water tank slabs, 'Skydome' and 'Skyrail' formwork systems.

The spurt in high-rise projects has come as a shot in the arm for formwork and scaffolding manufacturers. Almost every leading name is offering automated climbing systems these days. The range offered by Ulma Construction, a top name in fray for example, consists of its advanced self climbing formwork systems which come with a host of salient features including, cylinder workload 100KN, wide & protective platforms, roll-back arrangements up to 70 cm using track and gear mechanism and with possibility to be adapted to complex wall geometries, to mention only a few.

One more name that offers a wide range of formwork is Paschal India, which manufactures multipurpose "Modular" Formwork for verticals and the 'e-deck' System for the slabs. The company's modular formwork system is being used in several parts of the world on different sites where it has demonstrated its versatility, adaptability, and flexibility for foundations, walls, shafts, round walls,

columns, beams, etc.

The fact that what has been scratched is just the tip of the iceberg is driving manufacturers to continuously follow trends and come out with innovative products and services. Maini Construction Equipments Pvt Ltd (MCE), another well known player in the field, for example offers a complete range of aluminum formwork systems right from designing, manufacturing, erection to the complete site support. The company offers a range of steel scaffolding including cuplok systems, props, spans, metriform, wall form, and tailor made formworks etc.

It has become imperative for manufacturers to invest in R & D to develop new products catering to rapidly evolving market. Formwork 'H' Beams from Nav Nirman Beam Technics is a good case in point. Formwork 'H' Beams are very cost effective and easy to handle in column formwork, wall formwork, slab formwork, and scaffolding systems.

Turning Point Ahead

While the Indian formwork and scaffolding industry is headed in the right direction, there are still certain important challenges that need to be surmounted. Increasing awareness on safety and quality issues is of paramount importance. Codes and stipulations need to be discussed and newer guidelines keeping in tune with the times that we live need to be implemented. The increased emphasis on sustainability has meant that the use of automated formwork systems would increase quite rapidly in the near future. This presents another challenge in the form of availability of skilled manpower to operate these systems, a factor that potentially can make or mar the industry. The continued emphasis on infrastructure development is a good omen for the formwork industry. With the reforms push of the government expected to pick up steam and yield results by the end of the year, formwork, and scaffolding equipment manufacturers need to brace themselves up for an increasingly demanding Indian customer, who wants nothing but the best in the world. □

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Piercing Towers of Yerevan



Leading architect Vahan Misakyan has designed a fascinating skyscraper for the city of Yerevan in Armenia. The building consists of an assemblage of structural geodesics that form three piercing towers linked by habitable bridges at the top and bottom. There are offices, residences and hotel in each tower and the geodesics change in size and configuration accordingly. The bridges are used as commercial and recreational areas for the general public. One of the main concepts of the proposal is to create a soft transition between the vertical and horizontal planes by creating surfaces that peel off from the ground and transform into habitable areas. A transportation hub for the entire region emerges from one of these structures while a second one creates a bridge and a recreational park. The building is designed with the latest green technologies. An intelligent skin controls, through mechanical openings, the amount of light incidence and could also be used to reduce heat and provide natural ventilation. This skin is also equipped with rain water collection systems, photo voltaic cells and wind turbines.

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Concrete Block Making Machinery:

Ideal Mix of Cost-Effectiveness, Sustainability, and Speed of Construction Drives Demand for Concrete Block Making Machinery

MB, CE & Infrastructure Bureau Report

The Indian construction equipment industry has been showing interesting evolution patterns on the lines of those that were earlier being witnessed in developed nations, albeit at a much faster pace. While in the 1990s the construction equipment market was all about earthmoving and road construction equipment, the turn of the new century saw an influx of newer machines into the country. The advent of several new technologies and materials has dramatically changed the way buildings are constructed in the country. Concrete block making machinery for example, are now a preferred choice these days. Rising awareness levels are also contributing to the changing buyer

behavior patterns. The days of myths about concrete blocks are all but gone. Today concrete blocks are seen as a cost-effective and sustainable method of construction, which could not have come a day sooner, given the frequent economic crests and downs that have become commonplace.

India has emerged as a key market for latest concrete product machinery following the pattern of other types of construction equipment. It all started with the manually-operated and semi-automated machines that used to dominate the Indian market not so long ago. The concrete product machinery market was still to a very large extent unorganized in India. It is during the early

2000s that the major overseas brands began to test waters in India, which in a way completely revolutionized the market. With scales of projects increasing the old semi-operated machines were not enough and there was an urgent need for high capacity machines that were also easy to install, operate and maintain at the same time. Latest generation concrete block making machinery has helped address all these issues. Come bC India 2013 and there could be further developments in the market with the entry of several new models.

Competitive Market

The change in mindsets of customers is one of the key reasons for the in-

crease in demand for latest generation concrete block making machines. The earlier myth that concrete blocks are not ideally suitable for construction has gone for a toss and today they are in fact a preferred choice. Whether it is adherence to quality standards, cost-wise or the ease of construction, they have become the contractors' favourite. This change in mindset took a while coming but is here to stay and it is not surprising that India today is counted among the fastest growing markets for concrete block making machinery.

Several leading players are now looking to establish their presence in India. Hess Group with its Indian subsidiary, Hess India, for example is now a firmly established entity in the field. The company has got its manufacturing facility in Bengaluru and has successfully set up plants with leading names such as UltraTech, Jindal, Ahluwalia, Ecologic, and Lavin. Hess is actively involved in the manufacturer of concrete block machines that are used to produce concrete blocks, interlocking pavers, light weight AAC plants, pipe machines, fly ash utilizations, steel briquetting and press machines. Hess India also started production of wet cast press machines in India together with forest Press from UK. The company that offers a range of models globally including Multimat RH 2000-3, Multimat 1500-3, Multimat 760, Multimat 600-2 and Multimat RH -500 has been focusing on coming out with machines that are ideally suited for the Indian market. A good example is Hess India's RH 500 model. The model has a heavy duty, structure with advanced electrical, electronic, and mechanical features. With a production height that varies from 50-300 millimeters, it offers a wide range of products within the dimension of 1200x 670 board size. The positive height stop allows products to be produced to the specific and accurate height during the production of building blocks, interlocking pavers, and other concrete elements. Hess technology helps to maintain uniformity and dimensional accuracy with better finish.



Latest generation machines can churn out thousands of blocks in a variety of sizes and shapes

Another well-known name in fray is Columbia Pakona, which offers a wide range of concrete block machinery, along with its range of concrete pipe machinery and roof tile machinery. Its range of concrete block making machinery includes popular models 1600, SPM 20 and SPM 10 that are known for their ability to produce a wide variety of concrete products.

One more name that has got a range of concrete block making machinery is Besser. Good examples for the com-

pany's range is available in the form of its two Bescopac models, which produce concrete units ranging from 25-300 mm tall including, paving, standard and architectural block, and segmental retaining wall units.

Gradually the competition in the market is intensifying. Another well-known brand that is in fray is Universal Construction Machinery. The company offers models including, Block Making Machine Autoramming, Block Making Machine Vibratory, and Block Making



Whether for residential or commercial purpose concrete blocks have become a popular option

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Precast Components

The economic upheavals may actually prove a boon in disguise for the concrete block making machinery manufacturers in more ways than one. In today's scenario, with problems like labour shortage and rising material costs, precast components play a key role in helping keep projects within budget and completed within time. Winds of change are blowing across the Indian precast industry, which is all set to play a greater role in nation building. Right from precast components for infrastructure projects such as metro and flyovers to mass low cost housing, the precast industry is expected to boom anytime soon. Pre-cast components from small blocks to , culverts and slabs are in demand now. Whether it is residential, roadways, railways, aviation, you name it precast is a term that is being increasingly heard nowadays. This trend could spell some of the most exciting times ahead for the concrete block making machinery manufacturers.

Pipe Making Machines in Focus

While till a few years ago concrete product machinery meant machines



Mould

that could churn out all shapes of concrete blocks, the industry is now witnessing the advent of next generation machines that can mould concrete into myriad shapes. A good example of the lot is the pipe making machinery that has made an entry into the Indian market. The demand for concrete pipes has been spurred on by civic authorities, irrigation, and water supply projects. It is

not surprising then that many companies are now offering specialized concrete pipe making machinery. Good examples for them include Hess India, Apollo Infratech, and Columbia Pakona.

Apollo Infratech has entered into partnership with Hawkeye Pedershaab, USA, a global industry leader in the field of concrete pipe technology. The range of products offered by the company includes models such as CAP 150, Cage-Flex 260, and CAP 200/250. These machines with vertical cast technology are known for their ability to produce anywhere between 100 to 400 pipes in a day of various sizes.

Hess India, which is an acknowledged industry leader in concrete block making machinery, is also in fray. GCI has the product license for the pipe machines of Hess India. The company is known for its R & D prowess and coming out with innovative products tailoring it to the unique requirements of the Indian market.

Another company that offers vertically cast reinforced concrete pipe making machinery is Pakona Engineers (I) Pvt Ltd, which manufacturers them under license from Mario Croci Figli , Italy. The fully automatic model Mach 1 comes with features such as automatic



Shaping up well: Concrete pipe making machines are in demand in India



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lowering and raising of moulds and pipes, which in turn means that there is no requirement of overhead cranes. Additionally, since there is automatic feeding of concrete mix to the mould, there is faster filling of moulds and lower cycle times, apart from the overall reduction in manpower requirements and labour cost.

Green Revolution Gives Boost

Another major thrust area for the concrete block making machinery in-

dustry has been the increasing emphasis on green building technologies. Sustainability is the buzzword these days and concrete blocks offer the perfect solutions. The use of flyash bricks and blocks is on the rise. However, industry experts feel that only the tip of the iceberg has been tapped and that there is a lot that needs to be done in order to increase their usage. Leading names in the industry have been demanding that the concerned authorities in power should come out with initiatives such

as extending tax benefits, reducing VAT and excise duty on flyash-based products.

Rising levels of awareness has meant that contractors today no longer averse to using AAC or flyash blocks since they known that they can provide a host of advantages including reducing structural load, foundation load, while also offering superior thermal and sound insulation, to mention only a few. Additionally, the versatility of the latest generation concrete block making machines has meant that nowadays concrete blocks are being used both as part of the interiors and exteriors, what with them offering superior aesthetic value, a key factor in today's day and age in marketing buildings.

Shaping Up Well

The concrete product making machinery industry has been following some interesting growth patterns. For one the industry has been getting more organized from the turn of the new century. This has been primarily because of the entry of big global brands. Adding to this factor was the case of project scales increasing by the day. What this meant was that the earlier manual or semi-automated types of concrete block making machinery could no longer take the burden. This in turn facilitated the way of entry of bigger machines that are easy to install, operate, and maintain into the Indian market.

The increased emphasis on sustainability, along with the fact that concrete blocks offering an excellent way to be within-budget and also complete the project on time has meant that there has been no looking back for the industry. Today concrete blocks are being used in a big way in large-scale projects such as SEZs, integrated realty projects, commercial retail complexes and high-rise projects. Add the growing demand for precast components into the mix and you have got potentially one of the fastest growing market segments among all the types of construction equipment. It won't be a surprise if concrete block making machines were to steal the show during bC India 2013. □



Flyash based blocks are in demand nowadays



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Hess: German Precision in Shaping Concrete

Hess Group, the global leader in concrete machinery manufacturing, has been putting "concrete into shape" in India since 2009. Within this short period of time, the company has successfully installed and commissioned plants for Ultratech, Ecologic, Jindal (JSPL), KJS Concrete and Kankaria Group. Further projects are in progress with JK Lakshmi Cements, Lanvin Infra, Chelsea Concrete and UAL Industries.

Given the huge market size and potential of a country like India and its significant challenges in the construction sector, Hess identified the right partners and decided to address those challenges thru practical and feasible solutions for the market.

One such complete solution is Hess's ash utilization system. The Hess system overcomes environmental and pollution issues, transportation and manual handling thus ensuring maximum usage of ash in construction sector. The top and bottom ash can be transferred to a Hess plant with a pneumatic closed conveyor system for conversion. After the process of batching, mixing and curing, the final end product will come out in bundles for storage

and transportation. In a day, Hess machines are able to convert around 400 tons of ash into building materials. This way, Hess eliminates all ash associated issues, also saving on agricultural land which can be utilized for clay brick production. The end products out of Hess machines are thermal insulated, sound insulated which in turn will reduce electricity consumption.

Hess has also started to offer concrete block and interlocking paver machines, light weight aerated concrete block machines, high pressure wet cast kerb and slab machines partially from India. The benefit to the customer will be savings on import duty, freight cost, local parts and service other than the price.

With a worldwide presence and an impressive range of products, Hess group has emerged as the true concrete machinery expert and is eager to share its knowledge in Indian market. According to Mr. Manoj Kumar, Managing Director of Hess India, the mission to India may be challenging but it is necessary to showcase the shapes and strength of concrete technology.

With excellent safety features and easy spare parts availability, Hess

machines stand today at the top of the concrete supply chain. A true testimony to Hess products can be seen in its rapidly expanding production facilities worldwide. The latest in this addition is the new facility which will be opening on 14th February 2013 in Bangalore.

Construction is the back bone of every economy and building materials plays a vital part of it. Different types of materials have been used worldwide in the construction industry for centuries, some of the popular ones being concrete blocks, clay bricks, fly ash bricks, AAC-Autoclaved Aerated Concrete and precast products. The quality of such products ultimately reflects the value and life of the construction. The functional value of buildings has changed from a mere 'place of survival to place of show'.

Considering the need for aesthetics or special appearance, Hess is able to use different material finishes apart from the normal products. Using different colors and finishes for interlocking pavers, flag tiles, kerb stones and split stones has become necessary in this modern world. The Indian market is still at a nascent stage in this industry compared to other modern cities. Fortunately, technology has grown in a way to extend the best quality together with beauty not only to single houses but to the cities as well as to the entire country. To support the economic growth of India as well as to create the awareness in the market, Hess has started to participate in a number of trade shows and seminars.

The Hess machine uses the patented vibrating system called the "vari-otronic" vibration system. The vibrating method is based on servo/frequency controlled motors. The blocks produced by machines equipped with this patented technology, are all uniform in size, shape and density. This high level of precision is the major advantage of



Hess production factory in Bengaluru



Mr. Manoj Kumar, MD, Hess India,

this technology. The latest innovation is variotronic together with oil bath system to avoid regular greasing and bearing changes for longer periods - both time consuming acts!

The vibration system is integrated with the filling program (the position and number of shakes for the filler box and the filler box agitators can be entered very easy). This ensures even and accurate filling of concrete into the moulds, resulting in the production of high precision concrete products. Furthermore, the machines also have automatic height adjustment stops. The mould and tamper head vibration will automatically be stopped when the specified height is reached. This will avoid further compaction. The overall vibrations are drastically less because the motors are mounted on rubber buffers and equipped with special bearings. The flexibility that we have in adjusting the frequency and amplitude helps in quality output.

The latest innovation in Hess technology is the oil bath vibration system. In this system, there is no need of bearing changes and the entire vibration system is under warranty for 3 years. The machine includes the main press and main mix hopper with filler box. The machine has fast mould changer, compact hydraulic power pack and modern visualization control system from Siemens. Mobile process visualization system like a remote control can be

attached to check the settings from any point. For special requirements, magnetic plate stacking buffer system, split line, washing machine and grinding line can be added to the machine. The machines are provided with the most modern operating panel by Siemens with S7-400 to control the functions.

The Planetary mixers manufactured by Hess under the brand name Schlosser Pfeiffer, are specially designed for the semi dry mix for the concrete industry. These mixers are the perfect choice for processing a wide range of different concrete types containing a

large variety of aggregates, colour pigments, and materials of any kind. The mixing arms are height-adjustable. The level of precision used for fine-tuning and adjusting the tools translates directly into better mixing results, reduces wear and tear, and protects the drives from impact stress. The Schlosser mixers are designed with multiple discharge openings. A discharge accelerator is also available to reduce time up to 50%.

All the machines manufactured by Hess Group is benefitted by the excellent control and conveying systems which are upgradable at any point of time. Hess machines work with electric, electronic and software functions and comparatively less hydraulics than the competitors. This helps in fault detection and troubleshooting process easier and faster. Different types of conveyors are used for each application like belt conveyor, weigh batcher, skip system, bucket conveyor and latch conveyor to transfer the materials. All these operations are controlled and synchronized from a central system with highly integrated PLC.

Recently Hess commissioned the plant for Jindal Steel & Power Ltd (JSPL) next to the power plant. The fly ash as well as bottom ash (pond) could be transferred to the machine through a pneumatic conveying system. The





advantage with this system is that it is complete environmental friendly and avoids vehicle transportation, manual interference and pollution issues. There will not be any ash disposal and instead of that, the bi-product will converted to building materials.

The state of the art of Hess ma-

chines and production facilities use OEM components like Siemens, Bosch Rexworth, Lenze, SEW & Ifm. 24/7 service is available from Hess Germany as well as Hess India. The Indian entity will support operations in neighboring countries around Indian continent as well. □

For further details:

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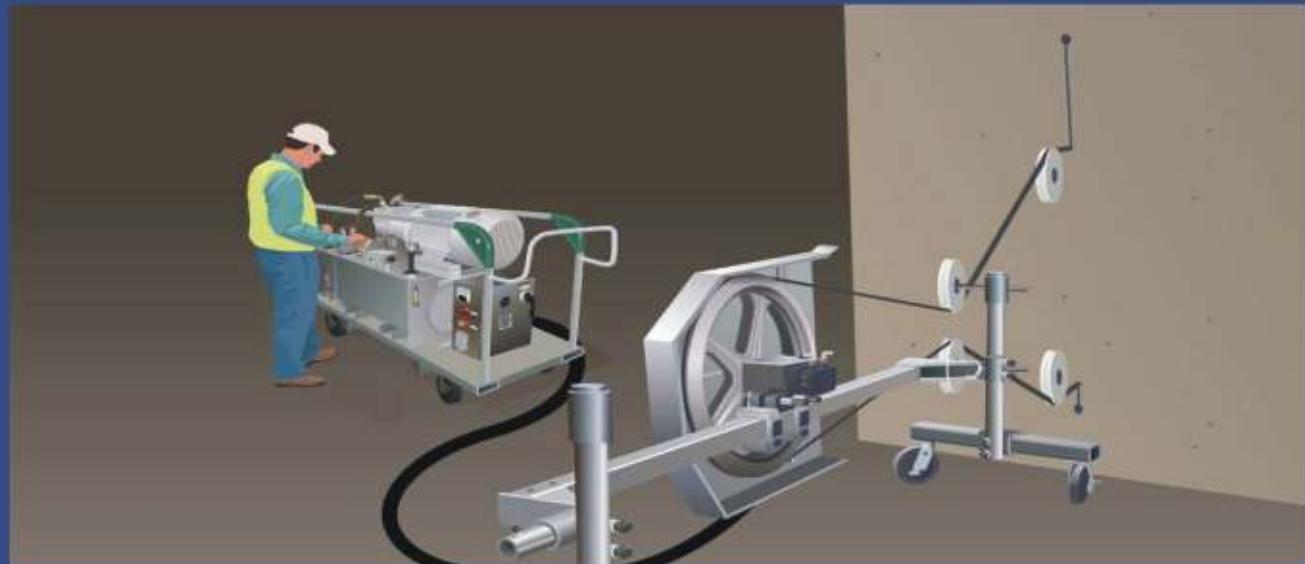
Sabiha Gökçen Airport is the World's Largest Seismically Isolated Building



The international terminal at Istanbul's Sabiha Gökçen Airport is the world's largest seismically isolated building. Stretching across more than 2 million square feet, the terminal doesn't sit directly on the soil, but rather on more than 300 isolators, bearings that can move side-to-side during an earthquake. The whole building moves as a single unit, which prevents damage from uneven forces acting on the structure. Atila Zekioglu, the engineer at the firm Arup, who designed the building said the building will only have to withstand one-fifth of the acceleration that it would have had to without the earthquake proofing. The builders have used seismic simulation software Dyna that was originally developed at Lawrence Livermore National Laboratory in the 1970s. The software can be used to model what will happen to materials under all kinds of conditions from car crashes to earthquakes to bomb blasts. The software has helped Zekioglu and his team to design the building that will really meet the objectives. The software aided them to run their building designs resulting in 14 different simulations of earthquakes. The triple friction pendulum isolators manufactured by Earthquake Protection Systems in Vallejo are more compact and can reduce the cost of constructing a building. The terminal is designed to withstand an earthquake as strong as 8.0 in Ritcher scale.

Controlled Dismantling Works

- ◆ Dismantling with Wire & Wall Saw Machines
- ◆ Dismantling with Pneumatic Machines
- ◆ Dismantling with Electrical Equipments
- ◆ Ball and Crane for Demolishing Masonry and Concrete Structure
- ◆ Mechanical Demolishing & Dismantling



Repairs and Rehabilitation Works

- ◆ Treatment of Old Reinforcement and Rebar
- ◆ Steel Fabrication with Anchoring & Bolting
- ◆ Fibre R/F con
- ◆ Micro Concrete Application
- ◆ Jacketing of RCC Elements
- ◆ Shotcreting / Guniting
- ◆ Fibre Wrap Systems
- ◆ Epoxy Stitching
- ◆ Epoxy Grouting crete Application
- ◆ Polymer Modified Concrete (PMC)
- ◆ Polymer Modified Mortar (PMM)

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Applicators for  

Concreting Equipment:

Continuing to be Key Types of Equipment in Nation Building

MB, CE & Infrastructure Bureau Report

Concrete and more of it is what India has been seeing and will see for quite some time as it is in the midst of its biggest ever infrastructure building spree. Along with the other BRICS nations and the GCC countries, India has emerged as one of the biggest 'construction site' in the world. While there could have been gaps in the growth story due to economic upheavals in recent times, the fact remains that infrastructure development would continue to be the key focus area of governments in India for at least a decade to come, if not more. There is good news awaiting concreting equipment manufacturers as there are certain signs that the push for demand may be around the corner. Crisil Research is expecting the cement demand to grow by almost 8 % y-o-y in 2012-13. The growth is likely to come from the renewed spurt to infrastructure development



plus the housing projects. The dull period in the South Indian market, forced by the prolonged periods of inactivity in Andhra Pradesh, the top cement consumer in the region, is expected to end and lead to a rather uniform demand pattern, rather than one that was skewed towards the northern and western parts of India in the recent past. Concreting equipment, whether it is concrete batching plants, boom and stationary pumps or transit mixers are in for a buoyant period of growth. The bC India 2013 trade show promises to showcase some of the latest technologies in these areas.

Concrete Growth Pattern

Concrete batching plants have increasingly becoming a common sight across Indian cities, both big and small. In fact near RTO check post rows of cement bulkers and mobile concrete batching plants standing is something that motorists have got used to in recent times. With the gradual increased in the usage of RMC, and the entry of top global brands the market for concrete batching plants has been undergoing a period of robust growth that is unlikely to stop anytime soon.

Manufacturers have become vary to

"It is only a matter of time before the market bounces back"



Anand Sundaresan
Managing Director, Schwing Stetter India

the fact that they are catering to an increasingly knowledgeable customer, who wants machines that are easy to install, operate, maintain, fuel efficient, while also being environment-friendly. The slowdown in recent times has meant that manufacturers had to work overtime to come out with models that would suit with their changed marketing strategies. Several leading names in the industry widened their product portfolio and tackled the situation head on. Schwing Stetter India, the Indian subsidiary of global concreting equipment giant Schwing, for instance has been expanding its product range over the past few years to cater to different market segments. The company's compact batching plant model CP30 is already working successfully in construction sites across the country. Schwing Stetter India also has the CP 30 with planetary mix for the growing demands of the precasting industry in its stable too. Its mobile concrete batching plant range consists of models, CP 18, MO.75, M1, M1.25, M2,



Mobile batching plants like the MP 21 from Aquarius Engineers are in demand

M2.25, and M 2.5. The M 2.5 is claimed to be the largest foundation less concrete batching plant in the country, ideally suited for high-rise and heavy construction projects. The company's horizontal concrete batching plant models include, H1, H1.25, H3, H4, H5, and H6.

Another company that offers a wide range of Apollo Infratech with models such as the ATP 21, ATP 31 and ATP61 under its compact series. While the ATP 21 and 31 with pan mixers feature advanced micro-processor control systems with LCD display, the ATP 61 comes with twin shaft mixer and features PLC based control panel. Its bigger plants include models such as ATP 20, ATP 30, ATP 45/ ATP 60, ATP 90 / ATP 120 ranging in capacity from 20 cu.m per hour to 120 cu.m per hour. It also offers an exclusive concrete batching plant meant for precast applications.

Manufacturers in India have been offering a mix of compact and bigger models to garner their shares of the market. Aquarius Engineers is another company that offers a range of models, starting with its MP21 and MP24 models that can be mounted on reusable precast foundation. It also offers a 'Super Mobile' concrete batching plant that comes with a unique folding design for reduced transport and crainage cost, apart from saving time. The company's stationary plants are available in various capacities ranging from 30 m³ to 240 m³ per hour of compacted concrete output. A top feature of the plants is the Skip Hoist and Belt arrangement option for mixer loading and a modular PLC based control system with real-time SCADA for control and data management. The company also offers special plant designs for dam construction and precast manufacturers.

One more name that offers a wide range of concrete batching plants is Ajax Fiori, ranging from radius lift arm batching plants to bin type and dragline type batching plants. Its RLA 20 radius lift arm plant can be erected within a day and can be transported in just two trucks. The bin type CBP 30 is a compact model from the company that be erected in a small



Manufacturers are banking on renewed fillip to infrastructure projects

space envelope of 5.25m x 11.25m. Easy to install, operate, and maintain, the company's also offers excellent technical support services.

Universal Construction Machinery is another top name which offers a range of quality mobile and stationary concrete batching plants. Its 'on wheel concrete batching plant' model with planetary mixer comes with universal feeding system and has a belt conveyor aggregate feeding system to load the aggregate into the mixer hopper. The mixer hopper has a load cell based weighing system which automatically stops the conveyor when desired quantity of aggregate is loaded in the mixer hopper. The company also offers a wide range of concrete mixers.

The concrete batching and mixing product segment is perhaps witnessing its most intense competition ever. Macons, an established name offers a wide range of concrete batching and mixing plants. Its range includes, horizontal concrete batching plant /mixing plant (MCP) Bin Series, compact concrete batching plant/mixing plant (RMC) Series, Compact (MAC) Series concrete batching /mixing plant and

semi-mobile concrete batching/mixing plant.

Greaves Cotton also offers concrete batching plants under its 'Perfect Mix 500 & 1000 Series' designed to suit Indian working conditions. Some of the top features of the 30 cu.m per hour capacity, fully automatic, Perfect Mix 500 model includes microprocessor based PLC with SCADA software and computer, heavy duty 1000 lit pan mixer with 22 KW motor and gear drive, among others. The Perfect Mix 1000 with 60 cu.m per hour

"The government should take steps to ensure easy access to capital and facilitate investment"



Wilfried Theissen
Managing Director, Putzmeister India

capacity comes with latest technology twin shaft mixers and even a 'Black Box'.

Another leading name in fray is REL-Construction Equipment division which offers concrete mixing plant models such as the Mo60 that are manufactured as per Wiggert GmbH design, which require minimal site preparation, shortest operational setup time, come fully pre-installed and are easy to transport.

Singh Construction Equipment is another company that offers plants that require just a few hours to commission. The company offers fully automatic concrete batching plants in ranging in capacity from 18 cu.m per hour to 30 cu.m per hour.

Another good example for product innovation is the mobile concrete batching plant from Safari Construction Equipment with features such as extra chassis support, smart hopper design to reduce spillage and an automatic water control system.

Poised for Further Growth

Things also have been moving at a hectic pace when it comes to concrete placement equipment too in recent times. While the number of boom pumps has been gradually increasing from the current estimates of roughly about 150-200 units annually, the demand for stationary concrete pumps has also been growing at a slightly faster rate. With large scale infrastructure projects expected to pick up steam in 2013, India could be welcoming some really long reach boom pumps in the 40 plus metre category soon. The boom in high rise construction, plus the sustained focus on infrastructure development has meant that the market for stationary concrete pumps has been maintaining a steady pace of growth pegged at around CAGR of 20%-25%, the economic slowdown notwithstanding. Concrete pumping is a market segment which is poised for the next step with the scale of infrastructure projects expected to increase soon.

Manufacturers have been focusing on providing a wide range of boom pumps catering to different requirements. With the construction boom shifting to



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Ajax Fiori self-loading concrete mixer in action at a construction site

smaller Tier-II and Tier-III cities, there has also been demand for slightly smaller capacity boom pumps from these centres. Almost every manufacturer has kept this segment in mind. Putzmeister India, considered a global leader in the field of boom pumps has been offering its BSF 20.7 model which has been placed as a starter boom pump for road contractors and RMC companies. Besides this model the company also offers the BSF M 20-3, BSF M 32-4, BSF 36-4, BSF 42-5, and BSS M 46-5 models, with the last mentioned model offering a reach height of 45.1 metres. When it comes to their offerings in the stationary concrete pumps, the Putzmeister offers models such as the BSA 1408 HD ideally suited for pumping concrete to the height range of 200 to 250 metres. Its BSA 1409 model has set a record pumping concrete over 1100 metres horizontally inside a tunnel at the Bhilanganga hydroelectrical power project in Uttarakhand.

In close competition with is range if Schwing Stetter India with its boom pump models including the S 43, S 36, S20 and S 17. According to the company, the S 43 is India's largest boom on a 4-axle truck and comes with features including, a 5-section R-Z placing boom, space-

saving curved outriggers in connection with a consistently lightweight design that make this boom pump ideally suited for a variety of infrastructure projects. Its stationary concrete pump models such as the SP 8800 and SP 2880 are also popular in the Indian market.

Another company that offers a wide range of truck mounted boom pumps and boom placers is Sany India. Its boom

placers range in reach capacity from 18 m radius to even 40 metre placing radius. Sany also offers an extensive range of truck mounted boom pumps, with a host of features such as intelligent control technologies, technology enabling automatic folding and unfolding of booms, automatic diagnosis for risk avoidance and protection against impact from boom slewing, among others. When it comes to the stationary concrete pump models Sany offers an array of machines under the HBT series.

Aquarius Engineers also offers concrete boom pumps in 20 m, 32 m, and 36m lengths, which has been designed for catering to various applications including, road buildings, and bridge projects. Its trailer mounted concrete pump range includes the 700, 1000, 1400, and 2100 Series. Among its range of trailer mounted concrete pumps is the popular 2109 D EHP model that has been designed for high-rise construction projects.

REL- Construction Equipment Division is one more company that offers a compact 17 meter boom placer, equipped with a KOEL 6 cylinder slave engine and a 120 bar pressure pumping unit, ideally suited for cramped urban environments. REL-Construction Equipment Division also offers the THP 45 D, THP 50 D and THP 60D models of concrete pumps.



Transit mixers are part of Apollo Infratech's wide product portfolio

Apollo Infratech also offers models of concrete pumps which includes models such as the PMP 40 D, SAP 50, and SAP 20. The company's concrete pumps have been used in thermal power projects in Madhya Pradesh, Chattisgarh and Jharkhand, apart from high-rise projects in Mumbai and other metros.

Concrete on the Move

Concrete on the go is the preference these days with contractors opting for RMC even for small residential projects secure in the knowledge that quality concrete will reach them on time, thanks to the latest generation of transit mixers. Another interesting trend that is being witnessed in the Indian market is the advent of the self-loading transit mixer, which is actually a sort of a combination of a transit mixer and a mini batching plant, which is finding an increasing number of takers.

Ajax Fiori can be considered a trendsetter when it comes to the self-loading transit mixers. Its models consists of the successful 'Argo' Series consisting of the Argo 1000 (1 cu.m), Argo 2000 (2 cu.m) and Argo 4000 (4 cu.m) versions. Ajax Fiori also offers the XVJ 4001 transit mixer with drum capacity of 4 m3 and the larger XC 600 model.

Apollo Infratech also offers its version of the self loading concrete mixer in the form of the ASTM2 model. Along with the self-loading concrete mixer, the company also offers the ATM 2, ATM 4 and ATM 6 models of transit mixers with 2m3, 4m 3, and 6m3 capacities.

One of the problems faced in Indian cities is that 6 m3 transit mixers which are the staple in India are not allowed during daytime traffic. Schwing Stetter India has managed to develop an entire new product segment with its smaller 30 cu.m capacity 'Nimo'. The smaller body of the transit mixer makes it ideally suited to maneuver in even in cramped urban environ, so typical of India.

Greaves Cotton offers its GCM XL model in the 6 m3 range and the GCM 45 in the 4 m3 range. Transit mixers from the company feature low centre of gravity which creates an ideal weight distri-



Various types of concreting equipment are now a familiar sight across construction sites in India

bution, obtaining better driving position and perfect stability even in narrow bends, again so common in India.

Another company that offers a quality range of transit mixers is Singh Construction Equipments which offers a 4 m3 model apart from the standard larger capacity 6 m3 model. Transit mixers from the company are made up of ST 52 grade wear resistance plat and feature a friendly operating control panel.

Optimistic Outlook

After a period of consistent growth followed by a period of uncertainties, the concreting equipment industry looks set for a period of consolidation. With the market segment getting more organized with the entry of major players, the customer has been the ultimate gainer. However, industry experts feel that as far as RMC is concerned India has just made a beginning and needs to travel a long way before it catches up with developed countries. This in turn translates into good news for equipment manufacturers. With the economic showing signs of revival there is a vibrant mood prevalent among manufacturers.

As Mr. Anand Sundaresan, MD of Schwing Stetter India, a leading player in the field and one of the foremost voices of the industry opined during an interaction that, "It is only a matter of time before the market bounces back," a positive sentiment that is substantiated by the fact that there have been regular launches of new concreting equipment models in recent times, despite all the talk of recessionary trends. What is needed is further push to economic reforms, which seems likely during the 2013-14 budget. One of the steps that needs to be taken by the concerned authorities was recently pointed out by Mr. Wilfried Theissen, MD of Putzmeister India, who felt that, "The government should take steps to ensure easy access to capital and facilitate investment, "something that could receive a boost as part of the 2013-14 budgetary proposals. Concreting equipment is one market segment that looks set for plenty of action in the near future. The bC India 2013 trade show promises to offer a peep into some of the products that could be real game changers for manufacturers in the next five years. □

Case to Rollout Upgraded Version of 752 Vibratory Compactor

Case Construction Equipment, market leader for vibratory compactors in India, will launch the first major product upgrade by Case in India with the introduction of a water cooled engine on its popular Case 752 tandem compactor at the Bauma Conexpo show is Feb, 2013.

The 9-ton Case 752 vibratory compactor with water cooled engine, which results in a substantial temperature reduction, will benefit customers with the engine's longer life and lower fuel consumption. The machine layout with the new engine also provides better access to components for servicing, reducing downtime and maintenance costs.

With over 3,000 units working in a variety of applications ranging from bituminous roads and runways to concrete pavements, the Case 752 model leads the market. The upgrade brings all these new benefits while retaining the compact dimensions of the machine, which will further strengthen its market leadership.

"Our endeavour is to consistently upgrade our machines, and our customers' feedback plays a key role in this. We upgrade our machines to ensure the best fuel efficiency in their class, longer life cycle expectancy, and minimal operating costs. The result is



Anil Bhatia

Director, Sales and Marketing, Case India



Case 752

our unwavering leadership position," said Mr. Anil Bhatia, Director Sales and Marketing, Case India.

Case leads the vibratory compactors market with proven models such as the newly upgraded tandem compactor 752, the 1107 soil compactor featuring an operating weight of 11.3 T and the 3.2 ton mini tandem 450 DX.

The Case 752 upgrade will be joined by other new models at the Bauma Conexpo show, as Case unveils its new offering for the Indian market.

Specifications:

Engine: Kirloskar	Power: 76 hp @2200rpm
Type: Water Cooled, 4- Cylinder, in line, 4 stroke, Turbo charged	Total displacement: 4 160 cc
	Operating weight: 8 960 Kg
	Maximum op. weight: 10 560kg

Case Construction Equipment sells and supports a full line of construction equipment around the

world, including loader/backhoes, excavators, motor graders, wheel loaders, vibratory compaction rollers, crawler dozers, skid steers, compact track loaders and telescopic handlers. Through Case dealers, customers have access to a true professional partner with world-class equipment and after-market support, industry-leading warranties and flexible financing. Case is a division of CNH Global N.V. (NYSE: CNH), a majority-owned subsidiary of Fiat Industrial S.p.A. (FI.MI). □

For further details:

Case New Holland Construction Equipments (India) Pvt. Ltd.

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Shriram Automall Grabs Top Slot in Used Construction Equipment Segment



Sameer Malhotra
CEO, Shriram Automall India Ltd.

Shriram Automall a subsidiary of Shriram Transport Finance Company (STFC) dealing in used vehicles and equipment Industry has reported remarkable growth since its inception in 2010. The company has expanded its business across the country under the dynamic leadership of its CEO Sameer Malhotra giving much importance to customer care. Today customers demand a one stop shop for all their requirements. Shriram Automall meets these demands of the customers by providing all the pre-requisites under one roof. The company acts as a mediator and facilitate smooth transactions between the buyer and the seller of used construction equipments. More and more customers prefer to buy used construction equipments to ensure best deals. The rates are much accommodative due to depreciation cost of the vehicles. It is a reason many customers prefer low run used construction equipment to new models.

Adopting a different strategy

With a proven track record Shriram



Hydraulic Excavators with different make and model for customer's easy view

Automall has been an undisputed market leader in used construction equipment. The company deals in trading of pre-owned construction equipment, commercial vehicles and agricultural equipment in a well organized manner handled by a professional team. The company has strong links with the dealers, brokers, major industry players, banks, NFBCs and various financial

institutions to deliver a total business solution. The company apart from identifying the buyer or seller helps them in acquiring finance and insurance for the vehicle. Much welcomed aspect of the company is its assistance in providing refurbishment solutions. Shriram Automall furnishes update on latest products and industry offerings and provides an opportunity for the customers



Jaipur Automall Inauguration



Kolkata Automall Inauguration

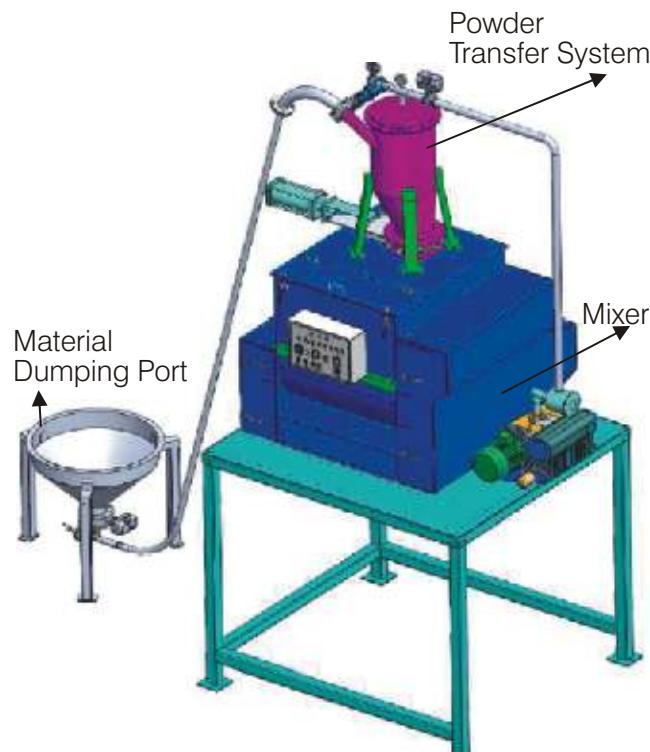


Hyderabad Automall Inauguration

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Chemical such as pesticide carriers, powder coating, EPS beads, leather chemicals, welding flux, scouring powder, plastic beads, powder etc.

Further details from:

M/s. Toshniwal Systems & Instruments Pvt. Ltd.,
267, Kilpauk Garden Road, Chennai - 600 010, India
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Shriram Automall has ventured into the used construction equipment business keeping in mind the amount of money involved in purchasing new construction equipment or spending more on rent of construction equipments.

Used construction equipment will help the customer to increase his fleet without compromising on the budget.

Reaching Out

Shriram Automall aspires to be a pioneer in the used construction equipment segment by organising more auc-



Loader Backhoe on the ramp for customer bidding

tions bringing buyers and sellers on a common pedestal. The company had so far conducted more than hundred auctions at various locations across the country. A well trained team provide pleasant and unforgettable experience for each and every customer. The company organised four major automalls at Chennai, Vadodra, Manesar and Panvel in 2011 and 13 more at Aurangabad, Pathankot, Cuttack, Gulbarga, Vishakhapatnam, Ludhiana, Hyderabad, Jammu, Faizabad, Tirunelveli, Jaipur, Kolkata and Kota in 2012 targeting a total of 60 by the end of 2013.



Fleet Enabler of the Year Award

New Schemes

The company introduced two customer friendly schemes 'New Look and One Stop' last year. New Look offers the facility of refurbishing the used construction equipment and selling them with the consent of the owner after valuation. New Look service stations are present in almost all the Automalls. For those who cannot visit the Automall, the company has provided a live auction route for them. The intranet solution provider gives a list of more than 20,000 vehicles for buying or selling with details about the vehicle. There are about 500 kiosks all over the country



Grand Automall in Hyderabad

ready to assist on call. This is more of a negotiated sale wherein the representative acts as a mediator between the buyer and seller and helps them to close the deal. Since its inception the company has worked with the fundamental conviction that a second hand buyer is no less than a firsthand buyer. The company also offers the transaction facility of bikes and autos through this channel and there are plans of doing these transactions through live auctions as well. The company has 'Pri-

vate Treaty' plan for bulk customers. For its commitment to serve the industry with even better services in a transparent environment, Shriram Automall was facilitated with the Fleet enabler of the Year award at the prestigious Apollo CV Awards 2012 in Mumbai.

Future Plans

The approaching months will see Shriram Automall marking its footprints in Kerala, Orissa, Haryana, Delhi, Rajasthan, West Bengal, Karnataka,

Madhya Pradesh and so on. The company is also planning to offer loan facility for purchase of construction equipment engines, tyre loan, credit cards, in the near future. □

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Limestone Producing Bacteria to Seal Concrete



Cowi's resident concrete expert, Ms Carola Edvardsen of the department for tunnels has produced a self-healing concrete to create durable and sustainable concrete structures in a project financed by the European Commission. The research is on self-healing materials for prolonged lifetime. The technique is designed to extend the life of structures by mixing limestone-producing bacteria with the concrete. The concept is similar to that of the bones of human body. The broken bones heal themselves over a period of time. Similarly as the water seeps into the concrete, the bacteria will activate and start producing limestone which will mend the cracks before they become a threat to the structure. The project is expected to cut maintenance costs by up to 2%, which in the EU alone adds up to more than €100m (£83m) each year. Normally reinforced or prestressed concrete develop crack with width limited to 0.2 to 0.4 mm depending on exposure class and type of concrete. These cracks will not produce much impact on structural stability but drastically affect liquid tightness. In construction of tunnels and large underground structures this liquid tightness will have effect on concrete segments due to cement hydration resulting in formation of early age cracks. In current practice preventive measures are expensive and cracks may allow faster penetration of aggressive liquids and gases resulting in higher risk of reinforcement corrosion. To overcome these problems Ms Carola Edvardsen has found out an unique feature to repair the damage efficiently using biological systems. The project is to design, develop, test, apply and evaluate self-healing methods for concrete structures. The system is an autonomous way to repair cracks and reduce maintenance costs drastically. Additionally, indirect costs due to traffic congestion can be avoided.

Hi-lite Brings its Global Expertise of Aluminium Shoring & Formwork to India



David Jackson, President,
Hi-Lite Systems JASCO Sales Inc.



Barry Jackson,
Exe. Vice President,
Hi-Lite Systems JASCO Sales Inc.



Virag Bhachech,
Vice President - Sales & Engineering,
Hi-Lite Systems JASCO Sales Inc.

The building formwork industry owes one of its significant breakthroughs to Jackson Scaffolding when George Jackson introduced the concept of single-pole scaffolding. Not stopping there, Jackson, later in the 1970s, strongly believed that aluminum could be used for wall forming and the many benefits of the lighter weight material inspired him to test and re-test his concept. The 12K aluminum shoring system that resulted has now become the most advanced system in the globe.

Now called Hi-Lite Systems, the company is increasingly making its mark in formwork and scaffolding across the globe by using innovation and design to meet the needs of its customers and to exceed contractor expectations. The organization has already executed several prestigious projects in India. Masterbuilder caught up with the dynamic team behind the organization - President: Mr. David Jackson, Exec. Vice President, Mr. Barry Jackson and, Vice President - Sales & Engineering - Mr. Virag Bhachech - to talk more about the company and its plans in India.

Please tell us about your company, your founder and Heritage timeline. You made headline in 1952 with a major breakthrough. Please tell us about it.

JACKSON SCAFFOLDING - 1952 - In 1952 George Jackson saw an opportunity to revolutionize the scaffolding industry by creating the "Jackson Single-Pole Scaffolding". Mr. Jackson

worked out of the basement of his home in Vancouver, B.C. designing and manufacturing by night and erecting projects by day. The concept of using a "Single-Pole" scaffold is still in use today in many areas where stucco is the exterior finish.

Next, Mr. Jackson turned his attention to the fabrication and design of a steel tube scaffold and shoring systems. With a reputation for quality and customer satisfaction, Mr. Jackson developed a market share that grew to over 80%. The rental product line grew to include not only single pole and steel scaffolding, but also tube and clamp scaffold, swing stages, shoring, fly forms, and bleachers. Mr. Jackson also started a rental company called JASCO Equipment Supply for the growing industry of tower cranes and man-hoist rental/service.

JASCO INDUSTRIES - 1974 - Mr. Jackson knew that steel was not a very desirable material to use in making construction products. Steel scaffolding and shoring systems are too heavy and require too much maintenance such as cleaning and painting due to the abuse on construction sites. A better system would have to be developed in order to counter the increasing cost of labour and repairs.

His solution was to create an Aluminum Frame to complement an aluminum joist/stringer beam system. The product that was created was the world's first aluminum shore frame called the "Super Hi-Lite Heavy Duty

Shoring System" which has a capacity of 24,000 lbs (10886 kgs) per frame (now called the 12K system).

What are the benefits of Aluminium forming, shoring and Building systems when compared to traditional alternatives.

As we know, the biggest challenges we face in the construction industry are:

- Lack of skilled labour and tradesman
- How to minimize labour fatigue and injury while improving productivity
- Unique styles and shapes of buildings pose framing challenges/difficulties
- Meeting construction schedules (pouring cycles)
- Budgets must complete projects as economically as possible

Where traditional wooden and steel system cannot perform efficiently, Hi-Lite's Aluminum Shoring and Forming system gives a unique advantage:

- User friendly systems that require minimal training, skills
- System can be easily erected and dismantled by low-skilled Work force
- Light weight products that meet and exceed SSFI, SIA, CSA & OSHA standards for product and work safety
- Extreme versatility and adaptability
 - Modularity allows contractors to meet and exceed budget and time line expectations
- Less labour, less crane time, less erection and dismantle time, less equipment loss and damages - results in reduced overall cost



Hi-Lite Systems India Private Limited

EXPERIENCE THE ADVANTAGE OF HI-LITE

ALUMINUM DROP LEG SYSTEMS



1ST PROJECT IN INDIA



Cognizant IT PARK - Chennai

- MANUFACTURED IN INDIA
- REDUCES CYCLE TIME
- IDEAL FOR STRUCTURES HAVING SLAB & BEAM
- TRUSS IS AVAILABLE IN 5' SEGMENTS - REDUCES REQUIREMENT OF RESHORING POSTS
- ELIMINATES PACKING BETWEEN SLAB AND BEAM
- PROVIDES HIGH PRODUCTIVITY DUE TO LESS WT.



23.2 MT/TOWER – ALUMINUM SHORING FRAME



MANUFACTURES OF ALUMINUM SHORING
AND FORMWORK SINCE 1970

- NO LOOSE PARTS -WITH INTEGRATED - COUPLERS & PINS
- 1/3RD THE WT. OF STEEL FRAME WITH SAME CAPACITY AS STEEL FRAME
- 11.16 MIN TO ASSEMBLE – 20' TOWER – (10 TIMES FASTER)
 - 114 MIN TO ASSEMBLE STEEL – 20' TOWER
 - SCRAP VALUE HIGH
- LIFE SPAN MORE THAN 20 YEARS – CURRENT RECORDS



HEAD OFF: TORONTO CANADA,
CHENNAI – INDIA, ABU DHABI – UAE, BEIJING – CHINA, LOS ANGLES – USA

CONTACT: VIRAG H BHACHECH (VP – SALES & ENGG)
TEL NO.: 001-647-880-4032
INDIA NO.: 9409-541-938
EMAIL: virag@asco-sales.com

Please tell us about product mix. What are the key solutions offered by you?

Hi-Lite System Offers:

- 12K – 23MT – Aluminum Shoring Frame
- 16K – 31MT & 25K – 48 MT Modular Alum. Shoring Frame
- Aluminum Post Shores
- Aluminum Telescopic Flying Form
- Aluminum Wall Formwork System
- Aluminum Bridge Overhang Bracket
- Scaffolding - Ledgers, Standards, Aluminum Decks, Aluminum Staircase Etc

Does R&D play an important role in terms of the solutions offered by you?

R&D plays a major role in the solutions offered by us because our years long experience in design, manufacturing and engineering has led to the invention of the World's first Aluminum Shoring Frame by us. The most efficient Aluminum Dropleg System was used by L&T at IT PARK – CHENNAI to achieve a five days cycle time. Aluminum telescopic flying form can be easily used in multi height floors just by changing the pins. Hi-Lite's Quick Release pin gives a unique advantage of releasing the load by just a small hit, so screwjack can turn easily and use of jack hammer can be completely eliminated

Tell us about your presence in India and your experience thus far.

After more than 20 technical presentations to all the departments of L&T, we have been given the first order to deliver Aluminum Equipments to more than 40 sites all across India. And consecutively after looking at the performance of our ongoing project in Singapore, we have been offered a LARGE AREA TABLE FORMS – Aluminum Drop Leg Trusses - for IT PARK – Chennai – for COGNIZANT to achieve a land mark of 5 days cycle time. After looking at the performance of three different types of Aluminum Flying form, L&T's quality department has recognized and given the best pref-

erence to HI-LITE'S Aluminum Drop Leg System.

What according to is the market size for formwork in India and what kind of headwinds do you particularly face in tier 2- and 3 cities.

Being a Canadian company, we deal with the Export Development of Canada which provides the finances for purchasing Aluminum Equipments along with all construction related equipment. This allows us to offer financing options for 24-36 months terms for tier 2 and tier 3 cities in addition to tier-1 cities.

Please take us through some of the challenging projects you have been involved in India and abroad.

In India, one of the main challenges faced during the IT Park project in Chennai in making large area table was to make the light weight tables with more than 100 m² of single table size for floor height of 4.2 mt and finally to achieve a five days cycle time.

Another challenging project outside India was the Winnipeg Airport where the slab thickness was close to 600 mm with sloping slab and sloping ground. The challenge was addressed by using 12K – 23 MT/Tower Aluminum Shoring Frame.

We recommend the use of this Aluminum Shoring frame for India especially in metro projects to eliminate all the accidents which we have noticed in use of Steel Shoring



IT PARK CHENNAI L&T Cognizant



12Kips/Leg = 23 MT/TOWER – Aluminum Shoring Frame – Winnipeg Airport – Canada

frames. This Aluminum shoring frame has non slippery surface rungs at every 2' thus helping the workers in climbing, securing the safety belts at certain interval. Light weight of frame helps workers in increasing productivity.

Destructive Test for 23 MT/Tower (5864 Kg/Leg) Aluminum Shoring Frame – (Free Fall Test from 16' Height)

Upon request of L&T this test was performed to verify the life span of Aluminum Shoring frame – which is more than 20 years in North America and in India we expect the same, a Destructive Test was Performed and displayed in IIT – Madras and to more than 250 Consultants, Structural Engineers & Technocrats.

Big Dig Boston: - Maximum slab thickness was more than 20' and mini-



Test-1 - Frame falling "HORIZONTALLY" from 16' height



Test-2 - Same Frame falling "VERTICALLY SIDEWAY" from 16' height



Test-3 - Same Frame falling "VERTICALLY-UPWARD" From 16' Height



Falling on a concrete floor



Checking the Frame Diameter after Test



No - deformation noticed - Successful Test

mum was 6'-6" –which was successfully taken care by our 25Kips/Leg- 48 MT/Tower Aluminum Shoring Frame.

Borgata Hotel & Casino/Revel Entertainment/Harrah's Casino: 80% of Casino – in New Jersey has been built by HI-LITE by using ALUMINUM TELESCOPIC FLYING FORM SYSTEM. The project was completed 8 weeks ahead of schedule and 3 days cycle time was achieved.



Big Dig Boston - 70% of Concrete Work was Done
Hi-lite - Boston - USA Project Duration = 5 Years
(Modern Continental, Barletta Heavy Division, Flatiron Corp)

Selection of Aluminum in Alum-inum Shoring & Formwork

Our years long experience in Engineering, Manufacturing, Designing of Aluminum Extrusions - we always recommend and educate our customer to use the right Aluminum for their product and inventory. Just a recent example in our order with L&T – we have used New Aluminum Billets – High Grades Structural Aluminum 6351-T6 in place of re melted scrap Aluminum ingots and the strength results in IIT – MADRAS after testing we have achieved was 100% higher strength in shear and 11% higher strength in Bending Moment

	Aluminum Shoring Frame	Steel Shoring Frame
Weight	1/3 rd The Weight of the Steel Frame	3 Times Heavier Than Aluminum Frame
Capacity	Same	Same
To Assemble 20' High Tower	11.16 Minutes (10 Times More Than Steel Frame)	114 Minutes
Dismantle The Tower	6.60 Minutes (11 Times Less Than Steel Frame)	76 Minutes
Scrap Value	Easily Bring 40% Of The Original Price	Very Minimum
Productivity	Very High	Low

Comparitive Analysis For 23 MT/TOWER – (5864 Kg/Leg) Aluminum Shoring Frame Vs Steel Shoring Frame

then L&T'S previous use of material.

It is also because of the culture of L&T to try and do innovative things and adopt the ideas available in the world to transfer the benefit and bring safety aspects in their inventory. In this regard we are greatly thankful to L&T'S officials for keeping a trust and faith in it and considering our suggestions.

As these Aluminum materials are used on site where heavy loads are getting transferred, so just by using the right Aluminum you can make sure that all your systems and equipments are safe and you can eliminate life threatening injuries and accidents on site in addition to achieving reduction of use equipments. If you have high strength material then obviously you will open up the spacing between the members and if you have low capacity of equipments then the spacing between the members will be less -so you have to use more equipment. So there are two advantage in it - First is SAFETY and Second is ECONOMY.

We strongly recommend our customers to be AWARE – while selecting the Aluminum for your equipments - it should be made out of New Aluminum Billets and not out of re melted scrap Aluminum ingots.

How do you customize your products for the Indian market?

As mentioned earlier, we strongly recommend 23 MT/Tower Aluminum Shoring Frame for Metro and other Hi-Rise projects where use of Aluminum Truss is not possible. We have an integrated couplers & pins. With no loose

parts, workers don't have to think of anything and compulsion for workers to use the pin, thus ensuring a completely safe and secured system. Aluminium shoring frames are 30% lighter than steel frame – with same capacity as steel frame and 10 times higher productivity. All of these features will bring



Borgata Hotels & Casino - Atlantic City - New Jersey - USA



Harrah's Casino - Atlantic City - New Jersey - USA

the project cost substantially down.

Have you considered exploring the rental market in terms of the solutions offered by you?

Yes, we are waiting for the right partner with respect to the territory. But upon getting the long term project we can immediately start the rental. □

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Volvo EC210: Excavators that are Equipped for Profits

On the face of it, one would dismiss it as just another piece of stone. But blue metal aka jelly is a lot more than that. It is one among the mostly mined materials in the world. Blue metal is indispensable on account of its predictable and uniform properties, especially for the construction of foundations. The excellent combo of this low cost reinforcement material with the other expensive cements forming concrete is yet another reason for its importance.

"Apart from roads and building foundations, you will also find our blue metal getting used on rail tracks. We may not get noticed, but we're present right there - everywhere", says Ramakrishnan, Proprietor, SVA Blue Metals – A mining firm based in Karanampettai in Tirupur district, Tamil Nadu.

"Ours is a family business started about 3 decades ago. We are proud of all our achievements, especially the Volvos. Volvo EC 210 series is one of our key strides involving tiring works of cutting hard rocks and digging mas-

"Unbroken demand helps us to invest on Volvo equipments without any guess. We equip ourselves to meet the ever-growing demand"



R. Ramakrishnan
Proprietor, SVA Blue Metals

sive boulders of stones all through the day. It was during the year 2007 we took the initiative to bring up this product. four such excavators are currently in action and further plans are on the move".

According to Ramakrishnan, from the perspective of quality and fuel-

efficiency, the Volvo equipments are in no way of secondary importance. He also points out that these excavators have less machine down-time and offers greater productivity. "On one hand, you just spend lesser fuel and on the other hand, you are assured of significant increase in productivity. No wonder we are raking in profits", he stresses with a genial smile.

He also adds that the company is pleased with the personalized service and attention offered by Advanced Construction Technologies – the Volvo dealer of the area. "The company show complete professionalism and are efficacious. They rush down to the spot in any case of service issue and give helping hands at all times", he says confidently.

In addition to all these, Ramakrishnan is also serving as the president of Karanampettai blue metal quarry owners association. He is well respected among industrialists and business peers. He shows great care for the welfare of his association and focuses on the well-being of its members. "I take part in helping my colleagues in their business. In fact, the entire credit belongs to them!", he added generously.

He made his final touch stating, "Not even one individual is dissatisfied or disappointed with Volvo equipments".

Our hearty thanks to Ramakrishnan for showing patience in sharing his experiences.

Wish you the best for all your endeavors. □



The Volvo 210 series excavators leave no stone unturned to deliver value for money to SVA Blue Metals, Karanampettai, Tirupur District

For further details:

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Yelachahally, Tavarekere Post, Hoskote,
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5th to 8th February 2013



JK Mini Crane – Now with Remote Controlled Boom Rotation & Lifting

JK Mini Crane has eased the lifting of construction material for high rises, hugely decreasing the dependency on labourers for construction work. The newly introduced JKMini1000 - 1 Ton capacity model makes it very quick and easy to lift all kinds of building material in a very cost effective way. This new model of mini crane has two new features - Remote controlled boom rotation and Remote controlled lifting operation. Both the features make the mini crane simpler to operate and use.

Remote controlled lifting removes the use of lever system, wherein the operator is required to manually control the motion of mini crane. With the JK Mini Cranes, operators now can control the mini crane via latest technology remote system. The remote system is very easy to operate and existing mini crane operators can easily be trained to use them.

The boom which is typically rotated for unloading the material on slab can now be remote controlled, thus minimizing the unloading time and effort. JK Mini cranes' boom has 360 degree rotation. No skilled operator is required to operate this machine, as it is very simple to operate and easy to install/dismantle.

Advanced safety features make the mini crane very safe to use on construction sites. A smart counter weight system keeps the mini crane stable and well-grounded and hence no foundation is required. A minimum boom length of 2 meter ensures that the bucket does not hit any of the cantilever structures of the building. Maximum



boom length of up to 4 meters is available. Auto mechanical brakes stop the mini crane operation on power and/or on any drive failure.

JK Mini Crane is used to lift concrete, cement, sand, bricks, tiles, steel rods and other building material to every floor. Four models of mini crane are available with 150 kg, 300 kg, 500 kg & 1 Ton lifting capacity. JK Mini Crane's utility is not limited to high rises and is widely used in water proofing, quarries, building foundations, chemical factories, dam and bridge works.

Safari Construction Equipments Pvt. Ltd. excels in manufacturing innovative and quality construction equipment. Their product range includes JK Mini Crane, JK Tough Rider, Mini Batching Plant, Reversible Drum Mixer, Safari Concrete Mixer, Builder Hoist, Tremix De watering System and other miscellaneous construction equipment.

With Service centers and offices at Maharashtra (Mumbai, Pune, Nagpur, Nashik) Gujarat (Dahej, Vadodara, Ahmedabad, Surat) Bangalore, Kolkata, Hyderabad, Chennai, Delhi, Raipur, Ranchi, Bhubaneswar - Orissa/ Odisha, it has a strong customer centric business model.

This latest model of mini crane will be available for display at outdoor stall no. 418, BC India, BKC, Mumbai. Along with the mini crane, tough rider and reversible drum mixer will also be exhibited. □

For further details:

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Escalating the Existing & Hoisting the New

The Wirtgen Group internationally renowned for its highly reliable construction machinery incorporating four traditional brands namely: Wirtgen, Vögele, Hamm and Kleemann, offer mobile machine solutions for road construction, road rehabilitation, mining and mineral processing. The company is all set to showcase its new Vögele 'Dash 3' paver at the BC India 2013 to be held on 5th-8th February at Mumbai, India.

The Brand New 'Dash 3' Pavers from VÖGELE A Generation of Superlative Machines

Eco-friendly Cummins diesel engine

The suffix "I" in the paver's name stands for intelligent emission control and means that the paver has been equipped with state-of-the-art engine technology ensuring extremely low emissions. The innovative, ultramodern drive system complies with the emission standards COM 3b and TIER 4i. With a power output of 186kW and 2,000rpm, the SUPER 2100-3i paver's 6-cylinder diesel engine can handle laydown rates up to 1,100 tonnes per hour. The fuel-saving ECO mode with 175kW at 1,700rpm is perfectly adequate for the majority of paving jobs.

"EcoPlus Package" for lower emissions

The philosophy behind the new emissions concept of the 'Dash 3' generation is lower consumption lower emissions lower costs. For VÖGELE, green is more than just a colour, as the pavers' technical innovations prove:

Splitter gearbox with ability to disengage hydraulic pumps - When the paver is stationary, all hydraulic pumps for traction, conveyors and augers as well as compaction are automatically switched off after about one minute. Fuel consumption is reduced considerably by

this new function. Reducing the trailing load also makes it significantly easier to start the paver at low outside temperatures.

Energy optimized tamper drive - The tamper is driven by a variable displacement pump which always delivers exactly the amount of oil needed for the current tamper speed and not a drop more or less.

Variable-speed fan - The variable-speed fan automatically adapts to different parameters, such as temperature of the hydraulic oil and engine load. This reduces noise levels as well as consumption.

Controlled hydraulic oil temperature - A bypass circuit allows the hydraulic oil to reach its optimum operating temperature very quickly. This in turn permits rapid, fuel-saving operation of the paver. If the oil temperature rises above the optimum level of 50 - 70 °C, a bypass diverts the oil through the cooler assembly.

User-friendly "ErgoPlus®" operating concept

The ErgoPlus® operating concept from VÖGELE adapts perfectly to the needs of the paver operator. The clear and logical arrangement of controls and the ergonomically designed workplace allows the operator to work in a safe and secure environment. ErgoPlus® has been developed further for the 'Dash 3' generation, with numerous additional ergonomic and functional advantages.

The redesigned four-colour display, for example, has a high-contrast user interface ensuring brilliant visibility even in poor lighting conditions. The graphic user interface and all symbols comply with the latest requirements in terms of product design. Self-explanatory symbols that are understood in all languages allow the operator to work intuitively.

What's more, the paver operator's seat and console on the operator platform,



Vögele 2100 Dash 3 Paver

as well as the screed consoles can now be adjusted even more easily to the operators' needs. Side paneling affords effective protection from the wind and rain.

"AutoSet" Function

With the new "AutoSet" function, the paver is quickly and safely prepared for a move on the job site. Screed, augers, hydraulic hopper front and deflectors in front of the crawler tracks are raised to transport position simply by pressing the Execute button. After the move of the paver on site, all components are reset to their previous working positions and paving parameters are retrieved, simply by pressing the button again. This ensures that no settings are lost when changing between "Pave" and "Job Site" modes. It also effectively prevents damage during transport. Each function can be activated and deactivated separately via the ErgoPlus® menu.

"PaveDock Assistant" improves process reliability

The "PaveDock Assistant" is an exceedingly efficient system which greatly facilitates communication between paver operator and driver of the feed vehicle. In this way, "PaveDock" from VÖGELE considerably improves process reliability during transfer of the mix. The signal lights on the paver and the controls on the paver operator's ErgoPlus® console are the key components of this communication system.

The paver comes with two signal lights mounted on the right and left of the hardtop. With these lights, the paver operator can give the driver of the feed lorry unmistakable signals, indicating what needs to be done (e.g. reverse, stop, dump). Having two lights, each in an elevated position, ensures that all signals are clearly visible to the lorry driver from all sides.

Sprung push-rollers ensure jolt-free transfer of the mix

Innovative push-rollers are optionally available from VÖGELE for the "dash 3" paver generation. Jolts from the feed lorry are absorbed very efficiently. As soon as the lorry docks onto the paver, a sensor is tripped and delivers a signal to the "PaveDock" indicator system. The lorry



WR 240

driver can react instantly, thus ensuring that the mix is transferred particularly safely and without jolts. For the paving team, this is a genuine value-added function, for it guarantees a top-quality pavement result.

WR 240 The new generation of cold recyclers and soil stabilizers

The new WR 240i stands for top quality on every job. With a 6-cylinder Cummins engine rated at up to 477 kW / 608 PS, the new generation of Wirtgen cold recyclers and soil stabilizers are not only extremely powerful, but also cover a correspondingly large range of applications.

New standards in cold recycling and soil stabilization

With the world's largest range of recycler and soil stabilizer products, Wirtgen can offer exactly the right solution for every application. The WR 240 is the fleet's specialist for powerfully stabilizing large areas of insufficiently cohesive soil. In cold recycling, it demonstrates its prowess in reusing resources 100% when processing defective asphalt pavements. Numerous new features put it at the top of the class in terms of efficiency and economy. Machine output has been optimized by powerful motorization with high torque reserves while engine power is transmitted directly and effectively, benefiting its milling performance. Nine different rotor speeds guarantee optimum mixing performance, aided also by ultra-modern computer-controlled metering technology with automatic monitoring to

ensure exactly the right mix.

A spacious modern cabin with camera system and a driver's seat that can be turned through 90° ensure that the machine operator always has a clear all-round view of the machine and the job site. The cabin with large windows can be displaced beyond the right-hand edge of the machine, permitting a perfect and direct view of the milled edge. All-wheel steering and a separate steering angle on the rear axle ensure an extremely small turning radius permitting swift maneuvering at the end of short passages and in confined spaces.

Intuitive operation for maximum performance

Technical improvements focus not only on driving comfort, but also on easy operation. As a result, the operator can now control all the main basic functions easily and conveniently via the highly responsive multi-functional joystick in the right-hand armrest. Automated processes, such as automatic lowering and raising of the milling and mixing rotor, the ergonomically designed workplace and the innovative reverse assist function, make life vastly more convenient for the operator and improve daily performance. □

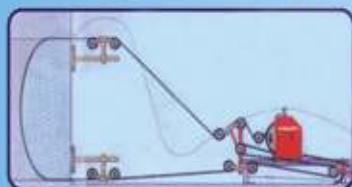
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Marini: Setting Benchmarks in Efficiency



Blesson Varghese

MD, Marini India

Founded in Alfonsine in 1899, Marini began with the production of bicycles, motor-cycles and motorbikes. In the early 20's Marini carried out an important role in the development of motorization and the recovery of the road building and maintenance industry, transforming its motors for industrial use and using them for road maintenance. Today, Marini employs directly more than 350 people and is a leader in developing top quality, green and profitable asphalt mixes. In a free-wheeling conversation with The Masterbuilder Blesson Varghese, MD, Marini India shares his thoughts on Marini's Products, BC 2013 and more.

Here are the excerpts from the conversation

Please share your thoughts on Bc 2013.



Tander



Paver

What are your expectations from the current edition?

Fayat Group was always strongly committed to India. Our products have been very widely used since the mechanization of National highways in India. Professional Indian contractors have greatly benefitted by the use of products through our brands like MARINI & BOMAG.

The strength of Fayat Group is its intense focus on the road life cycle. This makes us a unique partner, for life, to professional road contractor's interested to keep the lead. At display during BC India, will be some of the leading cutting edge technology for the complete range of equipment for road construction.

Our theme for BC India 2013 is to showcase leading profitable technology for sustainable development. This year at BC India, BOMAG will display some of its highly acclaimed Paving, Milling and compaction technology.

Marini, the leader in Asphalt plants will display advanced recycling technologies and unleash a complete range of Smart Energy efficient and Future ready asphalt

plants, to be introduced in India, during the first quarter of 2013.

Are you likely to be launching new product during the event?

Thanks to the tremendous response we have for our plants, at the show we are presenting the complete range of MAC series of asphalt plants, ranging from 120-360 Tph capacities. Also we are launching some key add-ons like very high content recycling options and smart technology for warm mixes.

On the BOMAG side, we are launching the complete range of the top of the line BOMAG Paver finishers, Milling machines, Pneumatic tyred rollers and tandems.

Please take us through the various equipments that you're likely to be showcasing during the event?

From BOMAG we have at the stand the BF800, the top of the line machine, a very high performer in the class, this paver can pave widths up to 9 mtrs and above, depending on the screeds selected. High compaction rates, laying capability and superior pavement finish, ensures that the

machine stays where it is most comfortable, ahead of the pack.

The BM 2000, is yet another power packed show stopper from BOMAG. This model is raising up industry benchmarks already in several countries and we are sure that it will create new records for efficiency, low cost operation and productivity that is so much required in India. The machines features several innovative technologies to deliver top notch reliability performance and profitability.

At display is also the world renowned BW RH 24: Pneumatic tyre roller from BOMAG, and the BW 124 Tandem roller, along with some light compaction equipment.

Given your global exposure how have you managed to overcome the recent recessionary trend that India is currently going through? Do you foresee an overall improvement in the investor sentiment going forward?

Recession has hit every industry and we are no exempt, however this has provided us opportunity to increase efficiency and utilize resources to their full potential.

Construction Markets are always cyclical and so we do see these surges as normal. To propel and to keep the growth figures, it is imperative that investments in infrastructure are made. We are therefore confident that the gloom will soon lift up and we will have the continued investment.

Our machines are designed to enhance productivity and deliver very high uptime. Since our machines reduce production costs drastically, we are sure our



Batching Plant

professional Indian contractors will employ these profitable technologies to ensure better bottom lines in a difficult market.

Give us an insight into the technical support services that you provide your clients?

We offer complete range of services to our customer including turn key operations for set up and installation to complete operation and maintenance of our machines. Our Plant MATE program is a runaway success and has helped achieve phenomenal results for our clientele.

Qualified employees are motivated, more confident on site, sue the machine

to its fullest potential and advantage and so become a factor in our clientele's success. Several training program for all levels are offered free of costs.

Tell us briefly about the latest technologies that you are pioneering with respect to asphalt mix plants in India?

Marini, is known for productivity performance and profitability. Each technological innovation made by us is focused to deliver results to our users. The new range of machines being introduced in India set benchmarks in efficiency. Our plants deliver a minimum of around 20% savings in power and energy.

Our plants are evolution ready, therefore every Marini user can meet up to the challenges they face in terms of new-age mixes, recycling, energy saving mixes, etc.

On the show some smart features of evolution ready aspects of our plants.

Marini plants have brought in high content recycling and performance mixes in to India. During BC India we are bringing up a wide range of tools for production of Intelligent mixes. These are specific mixes, which help our users to reduce production costs, fuel consumption and further reduce the carbon footprints. □



Roller

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Gujarat Government in Pact to Develop Affordable Homes with Apollo Infra and Spiroll-UK

An MoU of ₹ 5,000 Crore was signed between Apollo Infratech, Spiroll and Government of Gujarat for developing affordable mass housing using new Precast Technology. The scope of the MOU includes design, manufacturing, erection and commissioning of building. The Chief Minister of Gujarat Sri Narendra Modi, Mr. Mitul Patel, MD of Apollo Infratech and Mr. Stephen Carr, MD, Spiroll (UK) executed the MoU at the recently concluded Vibrant Gujarat Summit. With turnkey factory setups and low investment, quick payback strategy, Spiroll is ready to provide the solutions for investors looking to meet the demand for mass affordable housing, Mr Stephen Carr said. The benefits of precast technology in rapidly developing markets such as India are potentially huge and Spiroll are able to provide consultancy on precast design and detailing as well as the manufacturing capability to suit the environment. Apollo Infratech has introduced UK based Spiroll Precast Services Ltd to Indian markets to bring technology that will replace on-site (Conventional) construction method with the ready to-use Hollow core slab and Walls Panels, which will benefit the



Sri Narendra Modi, CM, Gujarat,
Mr. Stephen Carr, MD, Spiroll (UK)



MOU Signing

developer and civil contractors in speeding construction giving consistent quality with uniform strength and reduced labour at site with superior finish. Spiroll manufactures equipment and provides support to the pre-stressed concrete industry throughout the world. Spiroll support customers with appraisal, design, project management and bespoke training packages. It had set up 23 new hollowcore factories in 14 different countries in the last seven years. Spiroll provides customers with a tailored service to provide best quality precast products with good returns on investment. The Spiroll hollowcore system has significant benefits over other manufacturing pro-



cesses and it ensures that the production process not only produces the highest quality slab in the market but makes it more profitable in terms of the whole manufacturing process from the initial capital outlay, the raw material consumption; the amount of labour; the scrap rate and production time. Hollowcore slabs produced by the Spiroll extruder have good unsupported long span characteristics with excellent load carrying capacities and are used extensively for floors, roofs and walls in both commercial and, residential building projects. □

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In Conversation with Rajesh Kawoor

Head Concrete Division, UCE India



Rajesh Kawoor
Head Concrete Division, UCE India

UCE India headquartered in Pune has been involved in the manufacture and supply of construction equipments for over three decades now. The Masterbuilder caught up with Mr. Rajesh Kawoor, the Head Concrete Division of UCE India - to know more on the solutions and services offered by UCE. The below are the excerpts from the interaction.

At Universal Construction, what would you say is the strategic imperative of the company?

At Universal, we are very cautious about our strategies, as we have seen many ups and downs in the construction industry for last 5-6 years. For us, the most important thing is to equip ourselves to cater to the market situation as we see many changes happening in the market. We have also given importance to building our capacities to cater to the growing market in the future. We also update ourselves on the developments of the international construction equipment industry and hence we are already geared up to face the challenges poised from the International manufacturers. Our top priority is



Concrete Pump

to offer equipments with the highest international standards.

With anticipated investment of USD 1 trillion on infrastructure in the next 5 years, what are the prospects for the Indian construction industry? What challenges do you foresee?

With the investment of USD 1 trillion in next 5 years, the Indian Construction Industry has a prosperous future. One of the challenges we foresee is that the allocation is happening at a very slow pace. To accelerate the growth of construction industry, the projects should take off at the earliest. The market situation today is not encouraging, but we hope this a temporary phase and we overcome the hurdles which support the growth of the Industry.

Against this backdrop (investments of USD 1 trillion), what kind of investment will become more important for Universal to acquire or develop over the years? Will it also involve forging alliances and partnerships?

Considering the investment of USD 1 Trillion, we have already finalized our investment plans, but we will go in a phased manner depending on the market situation. To cater to the future

market, it is very important to plan the investments carefully and while doing this, we have tried to understand the past and the future projections.

What is the potential of the market in terms of concrete industry?

As Indian construction industry is on a developing stage and the infrastructure in India has to grow rapidly, the concrete industry will definitely grow in a larger scale accordingly. Looking at the market scenario about 10-15 years back, the growth of today is much higher. Hence, considering the need of infrastructure mainly in the building sector, the concreting industry should be developing at a faster pace compared to the other Industries. If everything goes well, then we expect a minimum of 20% growth rate in the Concrete Industry in the upcoming years. □

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Excerpts from a Brief Conversation with Dharmesh Surelia



Dharmesh Surelia

MD, Macons Equipments Pvt. Ltd.

Macons is a construction equipment manufacturing company based in Ahmedabad, Gujarat. The company was started two decades ago and has been showing steady improvement right from the beginning. The Masterbuilders met up with Mr. Dharmesh Surelia, the Chairman and Managing director of Macons equipments. Here are the excerpts from the conversation.

Please provide us an insight of your new product that are likely to be launched during bC India 2013? Take us through the range of products that you will be showcasing during the event.

Macons is focusing to display the equipments according to the emerging need of Indian infrastructure and construction industries as it is the best platform to launch and explore new products. Macons will display series of Compact Concrete Batching/Mixing Plants, Self-loading Transit Mixers, Mobile Concrete Batching/Mixing Plants, and Kerb Paver, to name a few.

What are your expectations from bC India 2013, vis-à-vis your marketing and promotional plans?

bC India is an esteemed platform to

explore new market opportunities, analyze current trends of construction industries, execute various activities to promote latest equipments and understand the customers need. This is an attempt to take initiative and prepare the ground work as it definitely helps promoting products to massive customers together, as well as to reach more and more business visitors of interest. It is also an attempt to extend the already existing clientele base and to achieve the objectives of marketing.

Variety of latest technologies are showcased at bC India, which will give visitors the opportunity to compare equipment from India and international manufacturers, in order to meet their requirements and have good exposure to latest trends of machines. bC India provides the construction industry with a professional platform for networking, investment and the exchange of ideas and information.

By taking part in this event, we look forward to meeting people, co-exhibitors and participants - ensuring our presence in this community. We share contacts in this industry and also learn about what others do in this field. It gives us an insight of what this sector has to offer for future and the steps we need to take to stay in-line with the trend.

As an industry expert, rank the attributes, starting from the most important that customers look for when making a purchase decision with respect to concrete batching plants – mobility, ease of installation, AMC options, technical support services, cost?

- 100% plus production
- Less foundation works required
- Especially quick erection & commissioning
- Compact and Economically Designed
- All electrical wiring on plant done at

Factory- Plug in and operate after erection

- Low transportation cost – Foldable and can be loaded on a single trailer
- Inbuilt pipeline of water, additive and pneumatic

The competition among various manufacturers of self-loading transit mixers is intensifying. What makes your self-loading transit mixer different from others?

Self loading transit mixers are developed in such a manner that it has enabled its customers to experience the most advanced technology which is been used currently in international markets & has been adopted by Macons.

- Less wastage of material by smooth loading and discharge of material.
- Easy and smooth operation with accurate weighing measure & better quality.
- Better control by operator which saves time.
- Steadier equipment which can work under harsh conditions.
- Key regions are covered to protect from dust, mud and damages.
- Ensures long time run.

In terms of units or value, how big would be the market for self-loading transit mixers in India? Give us an overview of your overseas technology partners. Do you incorporate changes in your equipment range based on the unique requirements of the Indian market? If so give us an example.

We had incorporation with Intercon Denmark for production of Mobile Concrete Batching mixing plant and with Dumec SRL for production of Self Loading Transit Mixers, which led to successful partnership and increased demand within short span of time and



Compact Concrete Batching Plant

made customers experience the most innovative technology.

Tell us about your recent R&D achievements?

Our R&D achievements include

series of compact concrete batching plant - the customized plants for all types of precast applications. MSP is yet another development by Macons with different features according to the requirement of Customers. In addition, further product developments are also ongoing.

Have you got any capacity expansion plans in the near future?

Our one of the factories – the Matoda plant has been expanded for full production of all type of plants.



Self-Loading Transit Mixers

What is your outlook for the construction equipment industry this year?

The construction equipment market in India is expected to witness dynamic growth in the near future, as a result of government investments in infrastructure along with the growing real estate sector. Factors driving the growth of CE in India are explained, including robust economic development coupled with growth of infrastructure stimulating the demand for more CE.

What would be your wish list to the government since the budget is just around the corner?

Because of the higher interest rates, we wish to have some improvement in the policies from the Government. □

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Gandhi automation has been in the lead in importing, distributing and installing entrance automation systems since 1996. It is India's No. 1 company in entrance automation and loading bay equipments. The company offers fire sliding doors and shutters which imparts complete safety and are suitable for applications in large wall openings.

Fire Sliding Doors

Fire rated sliding doors are available in single and double leaf doors with a maximum size of 8500mm x 6000mm and fire resistant to DIN 4102. These are ideal for large wall openings, also where headroom is limited frames can butt up to a ceiling or fix directly to overhead lintels.

Braking devices and automatic control systems can keep doors permanently open, but close them in emergency. Personnel access doors and wicket doors can be supplied without a bottom sill (threshold) allowing them to be used when the "parent" door remains closed.

- Fire resistant glazing can be fitted to access doors and sliding panels.
- 2–4 hours Fire rated resistance.
- Compliant with BS 476 part 22/UL/FM/REI 120

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Fire Sliding Doors

ges of styles meet or exceed industry fire safety testing standards including UL, FM and ULC. The doors are also compliant with all NFPA-80 standards.

- Door closes automatically under governor control after separation of fuse link.
- UL-listed brush - type smoke gaskets satisfy smoke retardation requirements.

Additional safety options include the fire Sentinel TM time-delay release device photoelectric or ionization-type smoke detectors, with or without heat detector.

Additionally available uninterrupted power supply for use with motor-operated doors allows door closure by central alarm or smoke detector under motor power.

- 2–4 hours Fire rated resistance.
- Compliant with BS 476 part 22/UL/FM/REI 120. □

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Fire Shutters

Interarch's Tracdek Roof & Wall Cladding Systems

Arvind Nanda, CEO and Founder Director – Interarch Building Products Pvt Ltd.

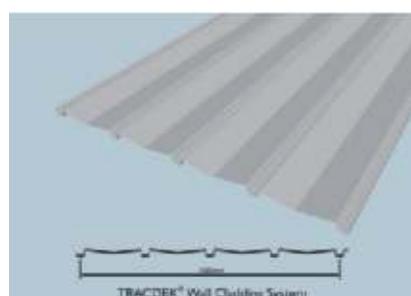
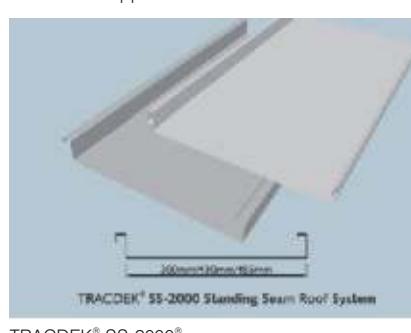
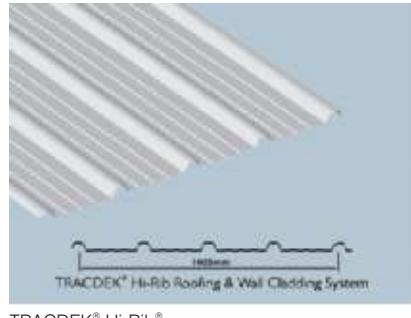
In 1995, Interarch introduced Tracdek and pioneered colour-coated engineered metal roof & wall systems in India. Since then, Interarch has been the leading manufacturer and provider of pre-engineered metal roof and wall systems that are used in some of the largest and most pristine projects of the country. It has a manufacturing capacity of more than 150000 MT per annum of steel building structures and over 40,000 MT per annum for its Tracdek Roof & Wall systems.

Owned and sold by Interarch Building Products Pvt Ltd, Tracdek Roof & Wall Cladding Systems offers an extended life span with guarantee of 20 years. All the roof profiles are designed to withstand complex engineering requirements and panels yield strength of 550 NPA with thickness of 0.47 mm to 0.58 mm and unlimited length. Tracdek roof systems can be rolled at site and on the top, giving a one piece panel to cover the entire segment of the roof. The completed systems are 100 % water tight and insulated against the elements.

TRACDEK® roof systems can be used as single skin roof or wall cladding or can be used in combination with advanced multi-layered insulated systems to give optimal thermal and acoustic characteristics. They can also be combined with other cladding systems on the inside to form a sandwich panel system.



Roofing profiles



Interarch creates world class building system for IGI T3

Structure completed in record time of 12 months!

Interarch is one pivotal cog in Delhi International Airport, Terminal 3. It completed the challenging task of putting up the entire pre-engineered steel roof structure and roofing system of IGI T3 in record time of 12 months- Today, DIAL T3 is considered the 2nd largest passenger terminal in asia.

Interarch installed a 7 layer roof over almost 200000m² of roof area on the entire airport. Through its course Interarch designed, manufactured, procured, and installed over 1.2 million square meters of roofing material to cover one of the largest buildings in Asia. Interarch shifted an entire team of senior design, manufacturing, project management and construction experts to the DIAL site for a period of over 10 months to handle the structural steel execution as well as the roofing of the gigantic terminal building. The entire roof of the airport is supported by almost 10,000 MT of structural steel, also installed by Interarch.



Tracdek metal roofing system for industrial and commercial buildings

Galvalume coated and insulated



Tracdek Metal roofing system are used for industrial and commercial buildings.

Interarch's much used TRACDEK Hi-Rib roofing systems are used in almost 90% of the project work done by Interarch in industrial, retail and commercial buildings. This high end, economical and highly efficient roofing system, provides unmatched life and longevity, giving its customers a hassle

free life, and upto 25 years guarantee on surface finishes.

Interarch also provides a standing seam SS-2000 roofing system that is the top of the market in roofing systems. A standing seam system is site roll formed, meaning it can be roll formed, and manufactured at sites on the roof level of any building allowing it seamless one peace roofing installation.



Interarch standing seam allows the customer to have a single piece panel covering the entire width of the building in lengths of upto 70m without breaks.

Interarch KLIPPON roofing system is the middle mark between TRACDEK and Standing Seam roofing systems and offers great affordability in projects ranging from residential, commercial and retail.

Tracdek metal roofing system in residential spaces

Tracdek roof systems for residential buildings offer varied variety of finishes and options to complement the aesthetics and sensitive requirements of living spaces. The materials used in roof, wall, partition and door panels provide the building with exceptional ther-



mal insulation and in turn, reduce the radiant heat penetration into the house from the external environment in summer and vice-versa in winter. This results in consumption of low electricity and hence maintains costs. The walls and roof fitted with state of the art insulators also act as energy sound barriers.

Apart from bungalows, rain screen facades, roof crowns of high rise structures, farm houses, cottages, resorts, low cost housing projects, they can be used almost everywhere and with limitless potential for any kind of shape, design and quality. □

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**REBAR CUT-BEND
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Models : BC32 / BC40



- Bi-directional Bending capable
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- Maximum bend Angle 180 deg U bend
- Tooling & Table to suit Bending Radius 2xD
- Set of Tooling for standard bar sizes
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Models : BC32 / BC40 / B50



**REINFORCING STEEL,
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- Bi-directional Bending, CW & CCW
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Criteria in Selecting an Appropriate Expansion / Seismic Joint System

Santosh Gosai
General Manager (India & Asia Pacific)
Three R Construction Solutions Pvt Ltd.

A. Overview

Five great threats compromise the integrity of any structure:
These threats are:

- Poor design
- Poor execution/workmanship
- Movement
- Fire
- Water

Whilst we have little control over the first of these, the latter four all fall within our remit with respect to expansion and movement control joints.

It is our philosophy to offer detailed technical support to consultants designing a structure and contractors erecting that building immaterial of which supplier's products are specified and supplied. If we do not have a product that is suitable and one of our competitors manufactures an item that is appropriate, then we are duty bound to advise the client to use that product.

The purpose of this technical paper is not to dissect our product ranges but rather to educate one and all - and most particularly structural engineers, consulting engineering support teams and architects

This education will span:

Understanding the differences between Expansion Joints and Movement Control Joints

Knowing the current international codes of practice and their directions in respect of control joints, expansion joints .

Expansion Joints

- Selecting appropriate Expansion Joints including understanding attendant requirements such as loading, fire proofing, waterproofing and considering environmental issues.

B. Expansion Joints & Movement Control Joints – The Differences

B.1 Expansion Joints - also known as Structural Movement Joints

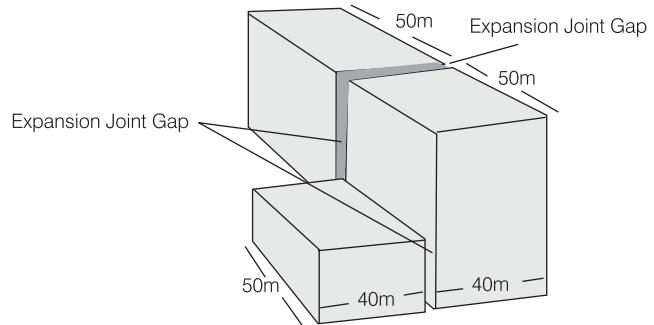
Expansion joints are physical gaps formed between sections of a large-scale building. These can range from a few millimetres wide to metres wide in some seismic locations. Effectively they divide a large scale building into smaller sub-buildings and these move independently of each other to accommodate deflections arising from:

- Structural settlement
- Planned structural deformation due to loading
- Drying shrinkage of structural components
- Ambient thermal gain and loss
- Wind loading
- Seismic events

Displayed in figure 1 below is a typical large-scale structure showing its divisions into sub-buildings by the use of expansion joint gaps.

Expansion joints are employed to span these gaps and move in conjunction with structural deflections arising from the various adjacent sub-buildings

B.2 Movement Control Joints -also known as Intermediate

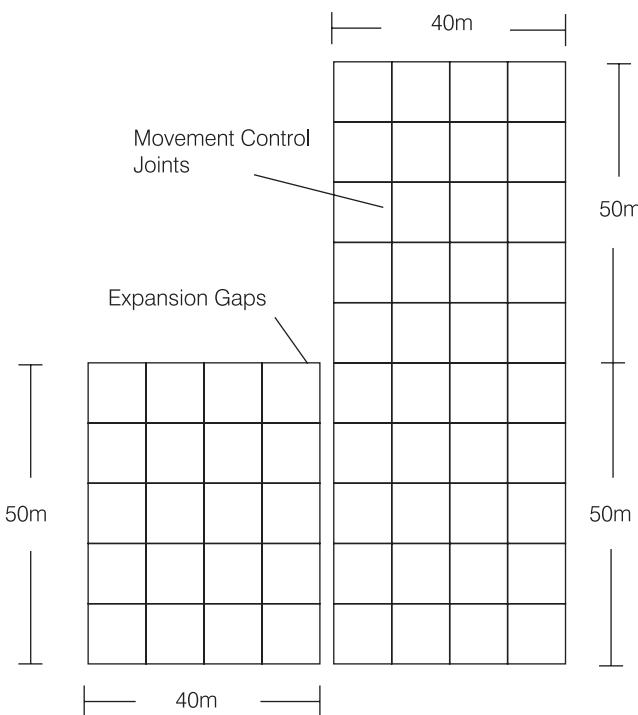


Joints

Whereas Expansion Joints absorb the large movements exhibited by a structure, Movement Control Joints are small joints designed to absorb localised stresses. These deflections arise from:

- Drying shrinkage of localised and adjacent structural components
- Small scale localised structural deformations such as creep
- Ambient thermal differentials - such as direct sunlight/no direct sun exposure, winter/summer and day/night variations
- Imposed thermal variations such as under-floor heating or cooling systems

Displayed in figure 2 below is the large-scale structure depicted in Figure 1 above showing its divisions into sub-buildings by the use of expansion joint gaps and further dividing its floor into a matrix of movement control joints simply spaced at the maximum bay sizes (10 metres x 10 metres) as recommended by current British Standard Codes of Practice



Codes of Practice indicate locations and spacing on movement control joints in floors and walls, however, the emphasis of this paper will be directed at joints in floors.

The reasons for this are three-fold:

- Floor joints are more problematic than wall joints in that they have to sustain traffic and sometimes-vigorous wet

cleaning processes and hence take greater punishment than their wall equivalent.

- Typically floor finishes are more expensive than wall finishes and failures in floors (by either unplanned cracking or sealant failure) result in progressive floor deterioration due to the aforementioned traffic and cleaning regimes.
- Increasingly floor finishes are subjected to Imposed thermal variations such as under-floor heating or cooling systems. These systems induce additional, rapidly forming stresses that, if not accommodated, result in collateral damage to paving.

C. Selecting appropriate Expansion Joints

There exists a sequence of questions that must first be asked prior to offering advice on the most appropriate expansion joint for a structure. In order these are:

C.1 Location

- Interior
- Exterior

This will in part determine the type and nature of the following questions that have to be asked and in addition would indicate that water-proofing integrity may be of importance and that the joint may sustain loading from vehicles not normally experienced within structures (trucks, buses etc.)

C.2 Type of Joint

- F:F Floor to Floor	W:C Wall to Ceiling
- F:W Floor to Wall	C:C Ceiling to Ceiling
- W:W Wall to Wall	R:W Roof to Wall - Exterior only
- C:W Corner Wall	R:R Roof to Roof - Exterior only

When working on a structure that require more than one of the above such as where a F:F (Floor to Floor) joint and a W:W (Wall to Wall) joint are needed and they meet each other, it is vitally important to define the floor joint first. The reason for this is that floor joints require more rigorous definition than wall joints in that they may:

- Need to sustain loading
- Have to be water-proofed

Having selected the floor joint you may continue to choose a matching wall profile.

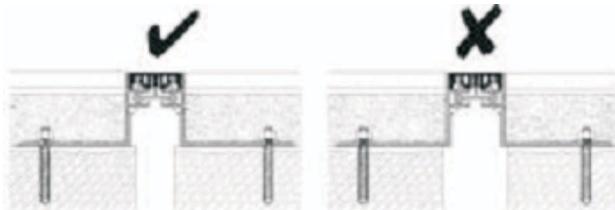
C.3 Expansion Gap Width

Knowing the expansion gap width is important in that you will have to select joints that do not cantilever out over the structural gap edge. Having an aluminium footplate jutting

Expansion Joints

unsupported over the edge of the structural gap - see figure 3 - is to create a point of possible future failure.

It is also advisable - if the structure has already been erected - to seek to find out the actual gap width formed on site rather than the gap width shown on the architect's drawings. Architects tend to draw idealised details that when translated



by site workmanship differ somewhat from the original intent.

C.4 Anticipated Movement

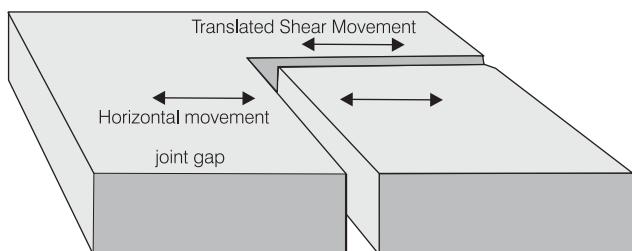
The magnitude of movements should be determined in three planes:

- Horizontal movement perpendicular to the joint opening

This movement is normally defined as a plus (+) movement indicating the gap opening and a minus (-) movement showing the gap closing. The movement may also be defined as a percentage of the gap width - hence a gap width of 50mm with +/-50% movement has an anticipated horizontal deflection of +/-25mm.

- Vertical deflection

This type of movement arises from settlement of the structure allied with planned structural deformation due to loading. What this means is that the load of the building will gradually cause it to sink (or in certain instances rise) and that for example columns supporting the structure may shorten or twist due to the individual load they have to support. In addition, some planned vertical deflections arising from seismic events may have been planned.



- Shear Movements

Opposing movements parallel to the expansion gap openings may also occur and these can be clearly seen in figure 4 below where a horizontal movement in one plane is translated into a shear movement equal to the sum of the

horizontal plus and minus movements where the expansion gap changes direction by 90°.

C.5 Loading

As with shear movement discussed above, the type and nature of loads placed upon expansion joints has either been ignored or is poorly understood. Yet over 90% of joint failure (not attributable to poor installation) arises from the wrong joint being selected with respect to the traffic loads it will have to accommodate. The following table is a synopsis of the findings of an independent survey conducted ten years ago into the causes of expansion joint failure:

Floor Expansion Joint Cover Failure	
Cause of Failure	%
Poor Installation	63
Joint Overloading	32
Support Substrate Failure	3
Anchorage Failure	1
Other	1

The magnitude of loading which a joint has to sustain therefore forms a critical element in the joint selection process and any load in excess of the system design load may cause the system to fail.

Loading considerations apply solely to F:F (Floor to Floor and to a lesser extent F:W Floor to Wall) joint systems.

Vehicle loading values have been derived from the two leading international standards:

- DIN 1055: Part 3: 'Loading of Forklift Trucks and Standard Vehicles having solid tyres'
- DIN 1072: 'Standard Moving Loads from vehicles having pneumatic tyres'

These standards are internationally recognised as the most rigorous of their type and define vehicle types, loading magnitudes, individual wheel loads and wheel contact areas from which the load ratings of 3R expansion joint range are derived.

'As you may know our catalogue only specifies the loading capacity of our joint systems based upon DIN 1055 'Loading from Forklift Trucks and Standard Vehicles'. The reason for this protocol is that forklift trucks, having solid tyres and a smaller area in contact with the joint, place greater load per mm² than an equivalent laden vehicle with pneumatic tyres -such as buses.'

Detailed below are the loading calculations for the 3R JOINT & SEAL systems

- DIN 1055 Forklift Loading

Bauma 2013 - Portraying Innovations and Interests

Bauma 2013 is the 30th international trade fair on construction machinery, building material and mining machines, construction vehicles and equipments is scheduled to be held on 15th -21st April at Munich. The event as in the past is expected to showcase a wide range of modern equipments for the visitors.

Among the star attractions of the event is the 3000 square meter stall set up by the German Engineering Federation (VDMA), in cooperation with Messe Munchen GmbH and the Agricultural Machinery Association for school children. Over 7500 pupils from across 170 schools have

already registered for the event. The bauma Innovation award 2013 is also scheduled to take place as a part of this international trade fair. The selection of nominees got over recently and a list of 15 nominees were sorted out. VDMA president, Johann Sailer disclosed the entire list of nominees during the press conference presented at bauma Media Dialog held at Munich on 29th January 2013.

The event is being held at a time when remarkable advancement has been made in the formwork and scaffolding industry. Bauma 2013, understanding the importance of comprehensive formwork and scaf-



folding will be showcasing the best among the latest innovations made by manufacturers. □

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Concrete Mixers



Paving Block Making Machines



Table Vibrator



Pan Mixers



Colour Mixer



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Web: www.shriengineering.in, www.shriconstructionequipments.com



Expansion Joints

Loading from a forklift truck, with a gross weight of 7.0 tonnes (70.0kN), and an individual wheel load of 3.25 tonnes (32.5kN), applied over a contact area of 200mm x 200mm. This methodology complies with the requirements of DIN 1055.

- DIN 1055 Forklift Loading

Load Data

Gross load Applied	70kN - (7.1 Tonnes)
Individual Wheel Load	32.5kN - (3.25 Tonnes)
Wheel Contact Area (200mm x 200mm)	40000mm ²

Plate Data

Plate Type	304 St. Steel
Allowable Bending Stress	19.6kg/mm ²
Span of Plate at max opening	87.3mm
Plate Length – in contact	400mm
Plate Thickness	6.00mm

*Load Calculation

Unit Load Applied	0.0625kg/mm ²
Load Applied on Plate	2182.5kg
Maximum Bending Moment	47,633.1 kg mm
Effective Plate Length	490.0mm
Section Modulus	2940.0mm ²
Applied Bending Stress	16.2kg/mm ²

As may be seen the Bending Stress applied to the centre plate of the joint - 16.2kg/mm² - is less than the Allowable Bending Stress for the 6.0mm thick Stainless Steel plate - 19.6kg/mm². Hence the joint meets the load rating required.

- DIN 1072 Loading from Vehicles with Pneumatic Tyres

Loading from a bus or truck having pneumatic tyres, with a gross weight of 30.0 tonnes (300kN), and an individual wheel load of 5.0 tonnes (50kN), applied over a contact area of 200mm x 400mm. This methodology complies with the requirements of DIN 1072 'Standard Moving Loads'

The 3R comprises 5.0mm thick 6063 T6 Aluminium side plates linked by a 6.0mm thick 304 Grade Stainless Steel centre plate. The joint has a movement capacity of +/- 25mm and uses a steel centring bar to locate the centre plate directly over the structural gap through the entire movement cycle.

- DIN 1072 Loading from Vehicles with Pneumatic Tyres

Load Data

Gross load Applied	300kN - (30.0 Tonnes)
Individual Wheel Load	50kN - (5.0 Tonnes)
Wheel Contact Area (200mm x 400mm)	80000mm ²

Plate Data

Plate Type	304 St. Steel
Allowable Bending Stress	19.6kg/mm ²
Span of Plate at max opening	87.3mm
Plate Length – in contact	400mm
Plate Thickness	6.00mm

*Load Calculation

Unit Load Applied	0.0625kg/mm ²
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As may be seen the Bending Stress applied to the centre plate of the joint - 16.2kg/mm² - is less than the Allowable Bending Stress for the 6.0mm thick Stainless Steel plate - 19.6kg/mm². Hence the joint meets the load rating required.

*Calculation Basis

Unit Load Applied = Individual Wheel Load/Contact Area
Load Applied on Plate = Contact Area x Unit Load Applied
Maximum Bending Moment = (Load Applied on Plate x Plate Span)/4
Effective Plate Length = Plate Length + (15 x Plate Thickness)
Section Modulus = (Effective Plate Length x (Plate Thickness) ²)/6
Applied Bending Stress = Maximum Bending Moment/Section Modulus'

It should be noted that all load calculations are based upon the joint being at its fully open position - in other words where the expansion gap has opened to its widest predicted width - hence the unsupported span of the centre plate is at maximum and the load is applied therefore across this maximum span.

C.6 Depth of Finishes

3R manufactures a very wide range of expansion joint (covers) and the primary reason for this is to accommodate the varying depths of finishes that are applied to floors, walls and ceilings.

- For floors we manufacture joints up to 70mm deep such that the joints are sufficiently deep to fit beneath virtually all the possible finishes that can be applied - ceramic tiles, marble, granite, slate, vinyl tiles, carpet etc.



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- For walls and ceilings we manufacture joints up to 25mm deep to accommodate the deepest renders.
- In some instances such as at floor to wall and wall to ceiling interfaces varying depths of footplate side to side will have to be used to accommodate differing finishes depths.

C.7 Fire Proofing Requirements

we feel it is of such importance that it is also repeated here as an integral part of Expansion Joint selection process.

As expansion joint gaps extend throughout a structure, rising from basement level and passing through slabs, walls, ceilings and roofs, they act as chimneys in the event of fire. They pass through fire compartment walls and floors and are often either:

- Ignored or accidentally omitted from fire planning for the building or
- Filled with Rockwool or other mineral wool barrier (possibly topped with a fire rated sealant) - and then ignored.

3R manufactures a range of fire barriers which are designed to complement our expansion joint ranges and which similarly deflect in response to structural movement whilst fully retaining the integrity of the structure in respect of toxic smoke and fire.

C.8 Waterproofing/weatherproofing Requirements

As with fire, waterproofing is one of the five great threats that compromise the integrity of any structure. Whilst this is clearly a concern for expansion joints that are installed externally, it is sometimes overlooked for joints used in internal wet wash-down zones.

With some of our joint ranges either total or partial waterproofing is in-built:

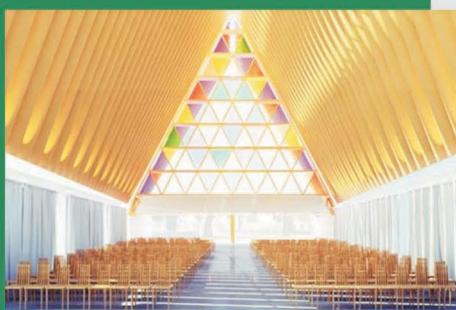
- The 3R100 Series is totally watertight and will support a head of water up to 22 metres
- The 100 Series has a synthetic rubber seal that helps prevent the ingress of water. In addition we can supply vapour barriers with this Series to help halt the passage of moisture.
- The 3R terrace copings Series are totally water and weatherproof.

With other joints, waterproofing is provided by additional membranes (EPDM or Butyl Rubber or pvc) that are fitted beneath joint footplates to provide watertight and weatherproof seals. If such joints are selected - and we are considering primarily the high load, all metal systems in this regard - then the designer must be advised to make provision for drainage of these membranes.

C.9 Environmental Considerations

This must cover very wide remits. For example:

- The metal visible surface profile of Expansion Joints employed in Food Processing facilities should only be manufactured from 316-grade stainless steel.
- Expansion Joint Casing Systems where wind speeds are anticipated to exceed 120kph should employ a locking mechanism to ensure that they remain in place during wind loading in excess of that value. Similarly, coping systems used in corrosive environments (close to factories, power stations and similar) should be manufactured from 316-grade stainless steel or have protective acid and alkali coatings applied after fabrication □



A Cathedral Carved Out Of Cardboard Tubes

Japanese architect Shigeru Ban has been entrusted the job to build a new cathedral to replace the one that was devastated and left 185 people dead after a massive 6.3-magnitude earthquake hit Christchurch. Since the city was in need of a church immediately, the architect planned to build a place of worship using cardboard. The cardboard cathedral is built using cardboard tubes having a diameter of 24-inches. The new church will have a simple A-frame with cardboard tubes coated with waterproof polyurethane and flame retardants and can accommodate 700 people. Ban, an architect known for his work with recycled materials such as cardboard, believes that architects should realize their social responsibility and build more for the public people who have lost their homes through natural disasters. The new cardboard cathedral is due to be completed in April next year and will have a concrete base with cardboard tubes forming two sides of the A-frame and containers helping hold the walls together. One end of the cathedral will be filled with stained glass and a polycarbonate roof will protect the occupants and the architecture from the elements. The cathedral is expected to have a lifespan of 50 years.

Solutions that Go Beyond Waterproofing

Waterproofing continues to trouble various stakeholders in the construction industry, especially the end customers, even though many products are available in the market today. The industry has been very innovative to introduce new products and technologies from time to time to keep up with the growing need and demand. A fine waterproofing system is one which has technocommercial advantages, as well as adds value to the project.

Until now the following major types of waterproofing products/systems are used:

Waterproofing System	Problems
Various membranes, surface coatings, etc	<ul style="list-style-type: none"> ➤ Membranes may crack when exposed to UV. ➤ Low service life. May have to be replaced periodically. ➤ Expensive and application may be hazardous. ➤ Prone to physical damage.
Crystalline products	<ul style="list-style-type: none"> ➤ May require to be mixed with water. Inconsistent water quality on site may lead to variable performance. ➤ May leave a residue on the surface. Hence bonding of paint/plaster is difficult. ➤ Depth of penetration may only be a few millimetres.

To overcome these issues and to provide a long lasting waterproofing solution, Polyflex has developed a 'Penetrating Flexible Waterproofing System', using products Evercrete Deep Penetrating Sealer (DPS) and Flexi-Crete (FC)

Evercrete Deep Penetrating Sealer (DPS)

In today's day and age, where infrastructure plays an important role in everyday life, it is very important to think beyond waterproofing. Waterproofing alone is not sufficient to preserve our buildings and other infrastructure.

Evercrete DPS is water based, ready to use material that not only water-

proofs concrete surfaces, but also preserves and enhance life of concrete structures. When applied on concrete surfaces, Evercrete DPS reacts with the free lime in the concrete, and penetrates the concrete up to a depth of 20-30 mm.

Features of Evercrete DPS

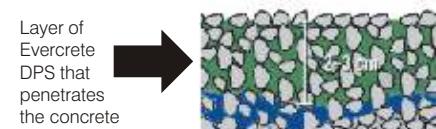
Waterproofing: As Evercrete DPS



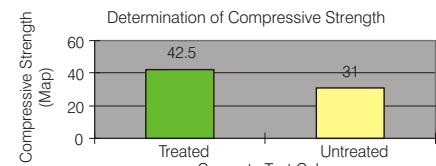
Penetration of Evercrete Deep Penetrating Sealer (DPS)

in consistent curing of concrete. Inconsistent water curing leads to the formation of hairline cracks. Evercrete DPS ensures consistent curing of concrete, and cost of curing compounds, water, labour, etc can be avoided.

Evercrete DPS penetrates the concrete and fills the micro-porosity of the concrete up to the depth of its penetration. As the micro-porosity is filled, the micro-density increases, and thus strength of concrete is increased.



Evercrete DPS entraps the moisture in concrete, which helps to cure concrete.



Seals Hairline Cracks: When applied on concrete surface, Evercrete DPS has the ability to seal hairline cracks up to 0.3 mm.

Permanent Penetrating Type Anti-Carbonation: Carbonation is the process in which the CO₂ from the atmosphere enters the concrete and reacts with the Ca(OH)₂ in the concrete. This reaction forms water inside the concrete, which reacts with the reinforcement, and leads to structural damage. The penetration of Evercrete DPS reduces the CO₂ entering the concrete, and hence protects the concrete from structural damage. Conventionally we have been accustomed to use anti-carbonation paints, which are surface

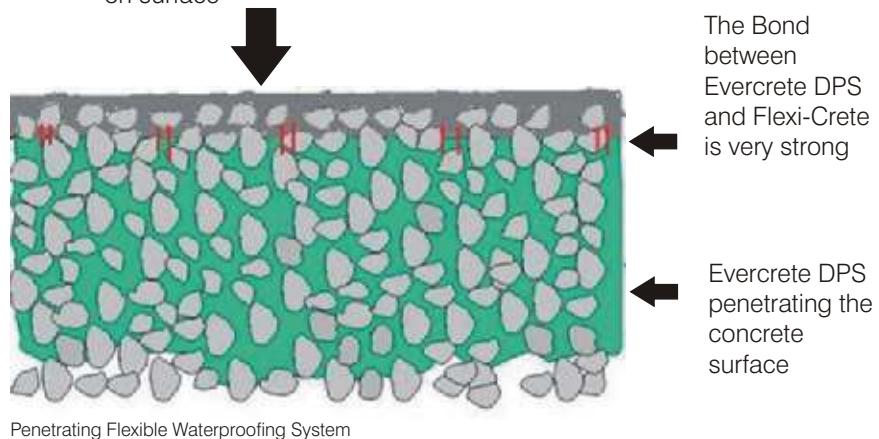
coating, and hence will have a limited life. Recoating will increase maintenance costs.

Evercrete DPS has many other advantages that contribute to preserving concrete structures such as protecting concrete from chloride ion ingress, resistance to sea water/sea weather, etc. There is no debonding issue of paint or plaster on surfaces treated with Evercrete DPS. Evercrete DPS is ready to use and is applied using a low pressure garden sprayer. The multiple advantages of Evercrete DPS benefits the developer, and also the end customer in the long run.

Flexi-Crete

Flexi-Crete is a Modified Hybrid Polymer which is flexible in nature and has waterproofing properties. The flexible nature of Flexi-Crete bridges the cracks formed in concrete due to thermal expansion and contraction.

The flexible layer of 'Flexi-Crete' on surface



Features of Flexi-Crete

Flexi-Crete alone can be used for waterproofing of various surfaces such as china chips terraces, asbestos roofs, etc.

The 'Penetrating Flexible Waterproofing System' is a long lasting

waterproofing solution and offers more than just waterproofing. □

For further details:

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Internally Cured High-performance Concrete for Long Life of Bridges



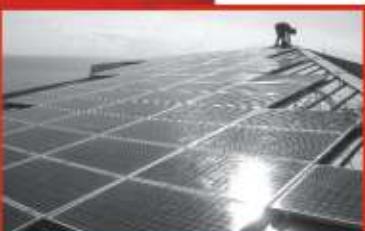
The Joint Transportation Research Program, a partnership between the Indiana Department of Transportation (INDOT) and Purdue with Weiss and INDOT will use internally cured high-performance concrete on four bridges this year, the first of which will be on State Road 933 in St. Joseph County. Internally cured high-performance concrete discovered by Purdue University research team led by Jason Weiss, a professor of civil engineering and director of Purdue's Pankow Materials Laboratory. The material will reduce maintenance costs and allow bridge decks to last longer. Internally cured high-performance concrete experiences substantially less cracking and concrete damage caused by deicing salt and when properly designed, the service life of bridge decks can be greatly extended, said Professor Jason Weiss. Concrete is normally made by mixing portland cement with water, sand and stone. In the curing or hardening process, water helps the concrete mixture gain strength by reacting with the cement. Traditionally, curing is promoted by adding water on top of the bridge deck surface. The new technology for internal curing provides additional water pockets inside the concrete, enhancing the reaction between the cement and water, which adds to strength and durability. The water pockets are formed by using small porous stones - or lightweight fine aggregate, as it is known in the industry - to replace some of the sand in the mixture. "A key step in the process is to pre-wet the lightweight aggregate with water before mixing the concrete," Weiss said. "Nearly five years of research has been performed to fully understand how to proportion these mixtures and the level of performance that can be expected." Tests also show the internally cured concrete is approximately 30 percent more resistant to salt ingress," Weiss said. The internal curing process also allows engineers to reduce the amount of portland cement used in the concrete by replacing a portion of it with supplementary materials, such as silica fume, fly ash and limestone. These supplements will reduce the waste stream, the need for raw materials and the carbon footprint of making concrete while improving its durability.

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A Global Certainty

The future will be urban-Globally. Of the world's total population of 6.8 billion people in 2010, 51% were living in urban areas. This urban share will rise to 61% of 8.2 billion people in 2030, and to 70% of 9.2 billion people in 2050. Likewise, urban areas will account for 86% of world GDP in 2025, up from 80% in 2007, thus representing an enormous economic potential. No surprise then that urban mobility, measured as the number of person-kilometres travelled per annum, is expected to almost triple between 2010 and 2050, accounting for 64% of total mobility and that, if current trends continue, urban mobility systems are going to break down spectacularly and exact a heavy toll.

Business models that urban mobility providers should adopt will have to provide long-term sustainable solutions for the benefit of all stakeholders.

Smart City Concept

The trend is clear. More than half the world's population lives in cities, and the percentage is growing rapidly. countries like Sweden, UAE, Russia, South Korea and Portugal are building new cities to attract talent in order to boost economic growth.

Within BRIC, in a desperate moves to accommodate the millions migrating to cities in search of the coveted middle-class urban life, Brazil, China, and India are raising new cities from dust. According to McKinsey, in China alone

350m people more than the current population of the United States will move to cities by 2030.

Cities, not nations, now compete for people, ideas and capital, and increasingly, a city's "smartness" is becoming a major selling point.

Smart City solutions are leveraging IT not only to deliver higher quality citizen services more efficiently, but also to affect behavior change in all stakeholders so cities can develop more sustainably.

A city becomes "smart" when all parts of its infrastructure and government services are digitally connected and optimized. The city's intelligent infrastructure is powered by three key technologies that share environment and citizen data constantly: sensors, the cloud and smart interfaces.

Key characteristics of Smart Cities therefore are:

Smart economy, smart mobility, smart governance, smart environment, smart living, smart people.

Yes, we need to achieve a lot and we can, because we are 'smart people', one essential characteristic of smart cities!

Indian Dilemma

Rapidly urbanizing India has added From 1991 to 2011 an urban population, from 100 million to 200 million. This means 50-percent of India's population is expected to live in cities by 2041. While India's six major metropolises' population doubled from 1981 to



2001, the automobiles soared by 775-percent during the period. The failure of grossly inadequate infrastructure and services to cope with such rapid growth was one roadblock coming in the way to rapid, equitable and sustainable growth of Indian cities. Government has been at loggerheads to circumvent this impediment.

For creating a sustainable, equitable and accessible urban future for India, we as Indians need to take an urgent



call on the modalities towards creating a sustainable, equitable and accessible urban future for India.

A final wake up call for Nation's project managers is that-Sustainable Township and Urban development are on 'critical path'!

The Road traversed So Far

Institutional mechanisms exist but capacities need to be built and skills honed.

Taking stock:

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for fast track development of cities across the country, bringing efficiency in urban infrastructure, service delivery mechanisms, community participation and accountability of Urban Local Bodies (ULBs) and Parastatal agencies towards citizens has done reasonably well except for certain utilization gaps which need to be reached by state governments.

Of its two components, the Urban Infrastructure and Governance (UIG) and the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), the former covers 65 Cities based on population as per 2001 census.

The mission has completed its normal tenure on March 2012. Extension of two years has been given for completion of ongoing projects & reforms only till March 2014.



Figure 1 Metro Projects

National Urban Transport Project (NUTP)

The Ministry of Urban Development has initiated the Sustainable Urban Transport Project (SUTP) with the support of Global Environment Facility (GEF), the World Bank and United Nations Development Program (UNDP) to foster a long-term partnership between the central government and state/local governments in the implementation of a greener environment under the ambit of the National Urban Transport Project (NUTP).

Smart Mobility Concept: As a part of this initiative, a number of projects have been undertaken by the Ministry. The 2nd Annual Urban Mobility India Conference cum Exhibition 2012 on the theme "Smart Mobility" was organized during the year. Union Urban Development Minister Shri Kamal Nath addressed the valedictory function.

2012 saw the Intelligent Transport System Project being implemented at Mysore, aiming to address the critical road congestion issue by offering state-of-the-art technologies and that make public transit systems a preferred option over private vehicles.

Ministry of Urban Development

The Ministry of Urban Development in 2012 with its programs JNNURM, SUTP, Intelligent Transport System Project stepped up the mood for infrastructure growth. The thrust in efficient and reliable urban transport systems was put up as crucial for India to sus-

tain high growth rate with inclusive development.

The stress on integrated development of sustainable urban transport has been laid by the government by focusing attention on metro projects. Mono rails and regional rapid transit systems to supplement the existing transport systems.

A landmark decision of regularizing unauthorized colonies in Delhi and review of Master Plan 2021 was also taken.

Mass Rapid Transit System

Metro projects are already under implementation across the country - Delhi, Kolkata, Mumbai, Bangalore, Chennai, Hyderabad, Jaipur and Kochi. The foundation-stone of Kochi metro was laid by the Prime Minister of India, Dr. Manmohan Singh at Kochi, Kerala on 13th September, 2012. The 25.3 km Kochi metro rail project will be fully elevated and has a total completion cost of ₹ 5,181 crore.



Figure 2 Mono Rail MRTS

S. No.	RRTS Corridor	Length (Km)
1	Delhi Sonipat -Panipat	111.2
2	Delhi-Gurgaon -Rewari -Alwar	180.0
3	Delhi-Ghaziabad-Meerut	90.2
Total		381.4

Table 1 RRTS Corridor

Municipal Equipment Expo

China 2013

May 9-11

China Import and Export Fair Pazhou Complex



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Technology	Advantages	Disadvantages	Some Cities where Operating	Useful for
• Heavy rail systems underground elevated or at grade	• Very high carrying capacity • High speed • Very low pollution in operations • Needs very little urban space	• Very high capital costs • High per unit operating costs if capacity utilization is low • Inflexible • Long gestation period • Needs extensive feeder network or very dense captive area • Complex interconnectivity with feeder system • Relatively complex technology requiring highly specialized manpower for O&M	• Singapore, Tokyo, Hongkong and several cities in Europe and North America	• Very high density corridors, where road space is very limited • Well suited for densely populated cities that have low sprawl and few spinal, long haul corridors • At grade systems are very good for suburban systems and the fringe areas of a city where space is more easily available
• Light rail	• Capital costs are less than for heavy rail systems • Per unit operating costs are less than for heavy rail systems • Low pollution levels • Needs less urban space than bus based systems • Needs limited urban space if elevated or underground (however	• Capital costs higher than for bus systems • Inflexible • Per unit operating costs higher than for bus systems if capacity utilization is low • Needs substantial urban space if at grade • Carrying capacity is lower than for heavy rail systems though comparable to high capacity bus systems • Needs extensive feeder network or dense captive area • Complex interconnectivity with feeder system • Relatively complex technology requiring specialized skills for O&M	• Several cities in North America and Europe	• Medium density corridors where space availability is adequate for supporting elevated structures or at grade tracks • Medium density cities with limited sprawl

TABLE A1: Relative characteristics of available public transport technologies

Technology	Advantages	Disadvantages	Some Cities where Operating	Useful for
• High capacity bus systems on dedicated lanes	• Capital costs lower than for rail based systems • Low O&M costs • Higher capacity than normal bus services • More flexible than rail based systems • Needs less extensive feeder network than rail based systems • Easy connectivity with feeder system • Relatively simple technology with easy availability of manpower for O&M	• Capacity not as high as heavy rail systems though comparable to light rail systems • More polluting than rail based systems • Needs imported fuel • Needs urban space for dedicated corridor	• Brazil, Colombia and several other cities in Latin America	• Medium density corridors where space availability is adequate for supporting the dedicated right of way • Medium density cities with limited sprawl • Medium density corridors where space is limited Promising for dense city centers
• Sky bus	• System is non-polluting Needs limited urban space for supporting elevated structures	• Not yet proven anywhere on commercial operations • Inflexible		
• Electric Trolley bus	• Advantages / disadvantages of normal bus system but with a higher capital cost, through non-polluting. Relatively inflexible and impacts city aesthetics due to overhead clutter.		• San Francisco	• All routes suitable buses but where local pollution has to be low
• Normal buses on shared right of way	• Very low capital cost • Low operating costs • Highly flexible • Do not need feeder systems	• Very low capacity • Polluting • Low speeds • Poor social image	• Most cities around the world	• Low density corridors where local pollution is not a critical issue • Feeder to higher capacity systems

TABLE A2: Relative characteristics of available public transport technologies



Figure 3 Bogota's TransMilenio Bus RTS success is based on the concentrated development that has occurred around bus corridors. (Photo by Javier Guillot).

Besides, following proposals were approved by the Empowered Group of Ministers (EGoM) on Mass Rapid Transit System (MRTS) as part of Delhi Metro Phase-III during 2012:

- i) Metro connection from Dwarka to Najafgarh by 2015
- ii) Extension of Mukundpur-Yamuna Vihar metro line to Shiv Vihar: by March, 2016
- iii) Extension of Delhi Metro from Mundka to Bahadurgarh, in Haryana: by March, 2016

Mono Rails

Mono rail another MRTS is ideal as a feeder system to larger metro networks as well as for stand-alone shorter networks in the densely populated pockets of cities. One Mono-rail corridor identified in Delhi is entrusted to DMRC which will start work on the elevated Delhi monorail project by March'13 to be commissioned in 2017 at an estimated cost of ₹ 2,235 crore, Transport Minister Ramakant Goswami said. The project will be integrated with Delhi Metro network.

The first phase of the monorail introduced in east Delhi, will stretch 10.8 km with 12 stations, connecting Shastri Park Metro and proposed Trilokpuri Metro

Stations. The expected daily ridership is 1.5 lakh.

Regional Rapid Transit System

The work for feasibility studies preparation of Regional Rapid Transit System (RRTS) for three prioritized corridors has been awarded to consultants. (Table 1)

The estimated project cost for the three corridors including escalation and Interest during construction (with Central and State Taxes) is ₹ 72,170 crore.

Public Transport Technologies

The wide spectrum spans from high capacity cum high cost, technologies like underground metro systems on one end to low capacity bus systems running on a shared right of way, on the other end. In between these extremes, are several choices, like buses on dedicated rights of way, elevated sky bus and monorail systems or electric trolley buses. High density trunk corridors and feeder systems or subsystems co exist.

High capacity rail systems and buses on shared rights of way have been the only ones in India, several of the others systems successfully operate in other parts of the world. New Bus Rapid Transit Systems (BRTS) are doing very well in cities like Bogota (Colombia) and

Curritiba (Brazil). Electric trolley buses are popular in San Francisco. (figure 3)

Each of these technologies has its unique characteristics and is best suited to a specific situation. Some of the public transport technologies that best suit different local situations are highlighted in Table A1 & A2. Choice has to be based on city specific land use and transport plans.

Review of Master Plan 2021

The Delhi Development Authority under the Ministry of Urban Development completed its review of the Delhi Master Plan-2021 during the year.

Four technical committees engaged in reviewing four broad areas of the Master Plan came up with presentations on the work done so far

The group on shelter focused on redevelopment of existing buildings and colonies especially in unauthorized colonies and jhuggi-jhonpri clusters. It asked for ratification of the recommendations on density as proposed in Master Plan Delhi 2021 for low-rise buildings with a high density.

It recommended sites selected for Transit-Oriented Development (TOD) be declared well in advance, even before the metro projects are fully operational so as to synergize works of various agencies.

The group on transport said the TOD plans should be area-specific. It called for comprehensive multimodal planning and road safety audits.

A positive change is that of the Ministry proposing to the Planning Commission a detailed thought-through investment requirement plan for the sector. A significant amount of investment is proposed for public transit and non-motorized transport, in addition to the conventional spending for road infrastructure improvements and expansion.

Linking Land Use and Urban Planning with TOD: integration is a key means of moving towards sustainability. Specifically, "transport, urban planning, business, public services, energy and food supply" are sectors that should "no longer be considered in isolation."

URBAN MOBILITY INDEX					
Ranking	City	Mobility Score	Ranking	City	Mobility Score
1	Hong Kong	81.9	34	Buenos Aires	65.3
2	Amsterdam	81.2	35	Tianjin	64.9
3	London	78.5	36	Ankara	64.8
4	Stockholm	77.6	37	Mumbai	63.7
5	Gothenburg	77.5	38	Chicago	63.5
6	Singapore	77.3	39	Lisbon	62.0
7	Wien (Vienna)	76.3	40	Lahore	61.2
8	Paris	76.3	41	Kolkata (Calcutta)	60.4
9	Munich	76.2	42	Dhaka	60.3
10	Boston	76.2	43	Moscow	60.1
11	Shanghai	74.7	44	Sao Paulo	59.7
12	Zurich	74.6	45	Delhi	58.5
13	Berlin	74.5	46	Dubai	58.0
14	Barcelona	72.3	47	Rome	57.9
15	Madrid	71.8	48	Lagos	57.7
16	Wuhan	71.7	49	Saint Petersburg	59.9
17	New York	71.6	50	Hyderabad	56.4
18	Guangzhou	71.6	51	Los Angeles	55.2
19	Seoul	71.5	52	Dallas	55.1
20	Cambridge (UK)	71.3	53	Kinshasa	54.9
21	Washington, D.C.	70.7	54	Miami	54.7
22	Osaka	70.2	55	Beghdad	53.7
23	Istanbul	70.2	56	Athens	53.3
24	Frankfurt	69.9	57	Kuala Lumpur	53.1
25	Tokyo	68.7	58	Houston	53.0
26	Shenzhen	68.5	59	Bangalore	51.3
27	Toronto	68.5	60	Karachi	51.0
28	Prague	67.8	61	Chennai (Madras)	50.0
29	Philadelphia	67.3	62	Krung Thep (Bangkok)	49.8
30	Brussels	67.3	63	Jakarta	48.6
31	Beijing	67.2	64	Manila	48.4
32	Milan	65.8	65	Tehran	47.7
33	Ciudad de Mexico (Mexico City)	65.7	66	Atlanta	46.2

Table C: UMI-Index

These sectors should always be clubbed together to be part of integrated systems providing users to have choice, flexibility and seamless connectivity to provide long-term mobility solutions.

Fundamentally, the principles of TOD promote integration of housing, employment and services to reduce the need to travel beyond walking distance. Orientation around transit assets then allows the remaining longer trips to occur using personal vehicles.

Many transport and urban planning experts have argued for the need to consider suburban retrofitting as a serious future solution to unsustainable urban sprawl. This involves identifying incremental, low-cost changes to the land-use and transportation systems in existing communities to better facilitate transit access, cycling and walking.

In a Smart City, the usage is centered on a networked infrastructure to improve economic and political efficiency and enable social, cultural and urban development. Infrastructure means business services, housing, leisure and lifestyle services linked to ICTs, ie mobile and fixed phones, satellite TVs, computer networks, e-commerce, internet services, thus bringing the idea of a wired city as the main development Model and of connectivity as a source of growth.

Measuring urban mobility performance: An “urban mobility index (UMI)” was developed to assess mobility performance of cities and identify the factors that explain differences in performance. UMI is an indicator of the effectiveness and efficiency of a city delivering mobility- goals (like travel time, carbon emissions and fatal accidents) and of the extent it has implemented innovative mobility concepts (like cycling, car sharing and smartcards).

A survey made compared cities, based on their size, prosperity and prevalence of public vs. individual motorized transport.

The analysis reveals a number of remarkable results:

First, Cities that promote walking, cycling, bike sharing, car sharing and



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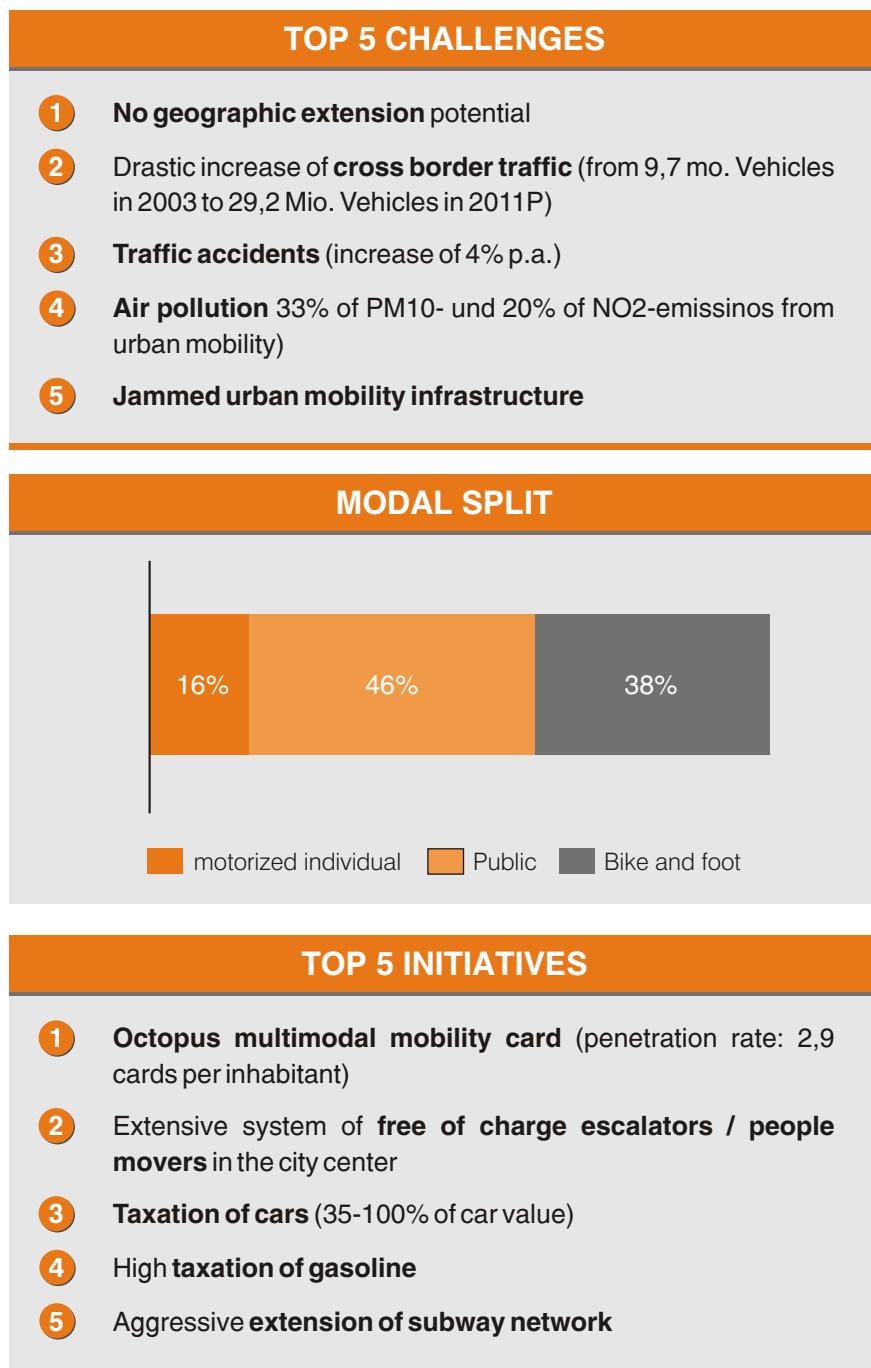
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Table 2: The Hong Kong Feat



Source: Census and Statistics Department Hong Kong, Arthur D. Little

smart mobility cards as part of an integrated mobility vision and strategy, significantly reduce travel times, fatal accidents and carbon emissions.

Use of innovative mobility concepts on one hand and mobility effectiveness and efficiency on the other hand gel well.

All performing cities strongly focus

on public transport, walking and cycling. Individual motorized mobility is out: less than half of the modal split.

Second, the average city achieves only two-thirds of the potential that could be reached today by applying best practice across all operations. The average score achieved by the 66 cit-

ies in the sample is 64.4 points on a maximum of 100 points. Only 15% of the cities score above 75 points (see Global ranking Arthur D. Little UMI).

A tremendous potential for performance improvement is available for all cities.

Third, Potential for improvement exists even for cities that score highest, (namely Hong Kong 81.9% and Amsterdam 81.2%), the scope to achieve 100%. While Hong Kong, scores very high in terms of smartcard penetration it lags in car and bike sharing.

Fourth, city size is independent of the mobility score. Small cities like Rome (57.9) and Athens (53.3) have much lower scores than the large cities of London (78.5) and Madrid (71.8).

The two other characteristics studied were, prosperity and prevalence of public transport ("modal split"), effect on mobility score. The richer the city and the lower the share of individual transport, the higher the score.

Finally, a very important finding especially for emerging economies like India is that:

Cities in mature regions are not necessarily a model that cities in emerging regions should aspire to emulate. The reason is that many of these, such as Tokyo, Prague, Moscow, Atlanta and Miami, still neither have a vision nor documented strategies that clearly articulate what they want their future mobility systems to look like.

Beware: cities in emerging regions replicating the pathway that cities in mature regions have followed, risk introducing the very same problems of poor modal split, high carbon emissions and low travel speed.

The 'Moolaah': "Chicken or Egg" Situation

Future lies in mobility systems adapting to changing demands & integrated offerings with rewarding investors appropriately. Mobility stakeholders should focus on four axes to enable innovative and effective mobility concepts:

- Collaborative platform to align ob-

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jectives and prioritize common initiatives for the city's Mobility system;

- Vision and strategies that point out right future mobility system;
- Understand and respond to user needs and usage patterns for offering seamless multimodal services;
- Open to market mechanisms for fair competition and enable entry of new players.

Commercial enterprises will enter into a business only if they can earn a fair return commensurate with the risks taken. Solving the urban mobility challenge requires system-level innovations.

These are notorious for "chicken or egg" situations: before a company invests the question is: Which business models can companies adopt when seeking to participate in urban mobility solutions profitably?

Private sector, has a vital role and till now has fared well as witnessed in few urban transit projects. But to tap private financing the right investment environment is a precondition.

Lessons to Learn:

Hong Kong: Highly integrated mobility system

Thanks to the ease of use and the existence of such a comprehensive and highly integrated mobility system, half of travellers used public transport.

The fact that a further 40 per cent get about either on foot or by bike means that the rate of registered cars per citizen is very low and just 10 per cent of journeys are taken by individual motorised transport. As a result, Hongkong has an exemplary level of transport-related CO2 emissions per capita, low mean travel times to work and a low rate of transport-related fatalities. (Table 2 sums up Hong Kong's top slot).

China's massive transport infrastructure build-out

With investment in public transit systems, be it long-distance transport or intra-city transport. The massive drive in China to construct high speed rail system and the BRT indicates the direction that India could also adopt i.e. build more competitive mass-transport systems. The recent focus in many Chinese cities on demand management is also something that India can learn from.

Bogota, Colombia, TransMilenio: An Integrated Mass Transit System is a bus rapid transit system thriving on an effective mass transit system. Since 2000, it has reduced motorization, improved road safety with BRT's growth. Numbers show, 95 percent road space was occupied by cars to transport just 17 percent of the population. With TransMilenio, non-motorized travel has

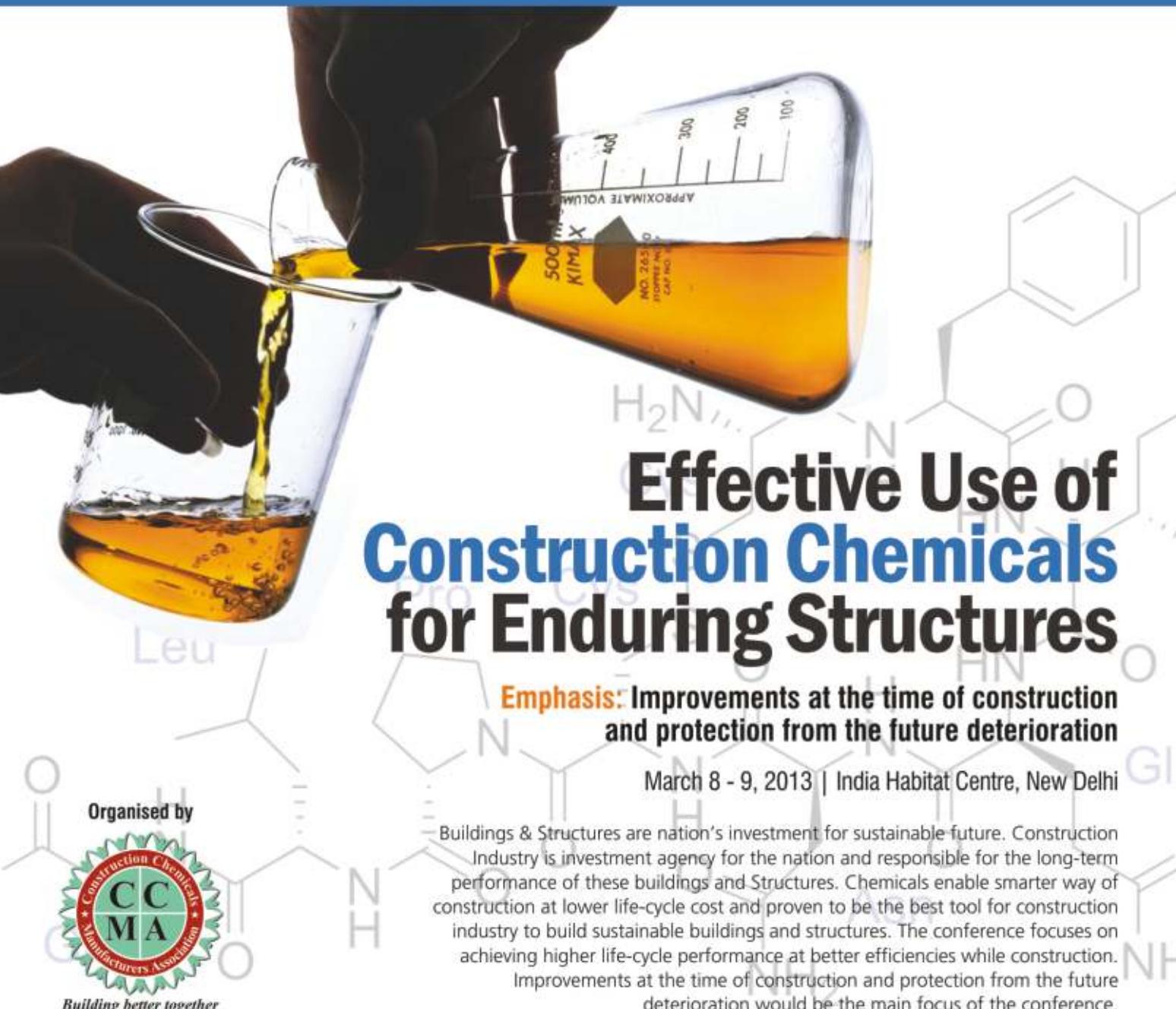
increased with 300 kilometers of cycle paths ("ciclo-rutas"). Further, with the advent of this system other policies also came up like restriction of private vehicles during peak commuting hours and measures like higher car-parking rates, and compulsory car-free dates called "dia sin carro." The system has improved street safety and reduced accidents by 81 percent. □

Author's Bio

The author leads our Delhi bureau. An Engineer and qualified ADR professional (NALSAR alumnus), Sadagopan Seshadri has been a senior Contract Management Professional in large national & International Companies. His domain experience is in Building Products, Cement plants and Mega Power project execution. He is expert visiting faculty for Contract Management at the SSAA, IP University, New Delhi.

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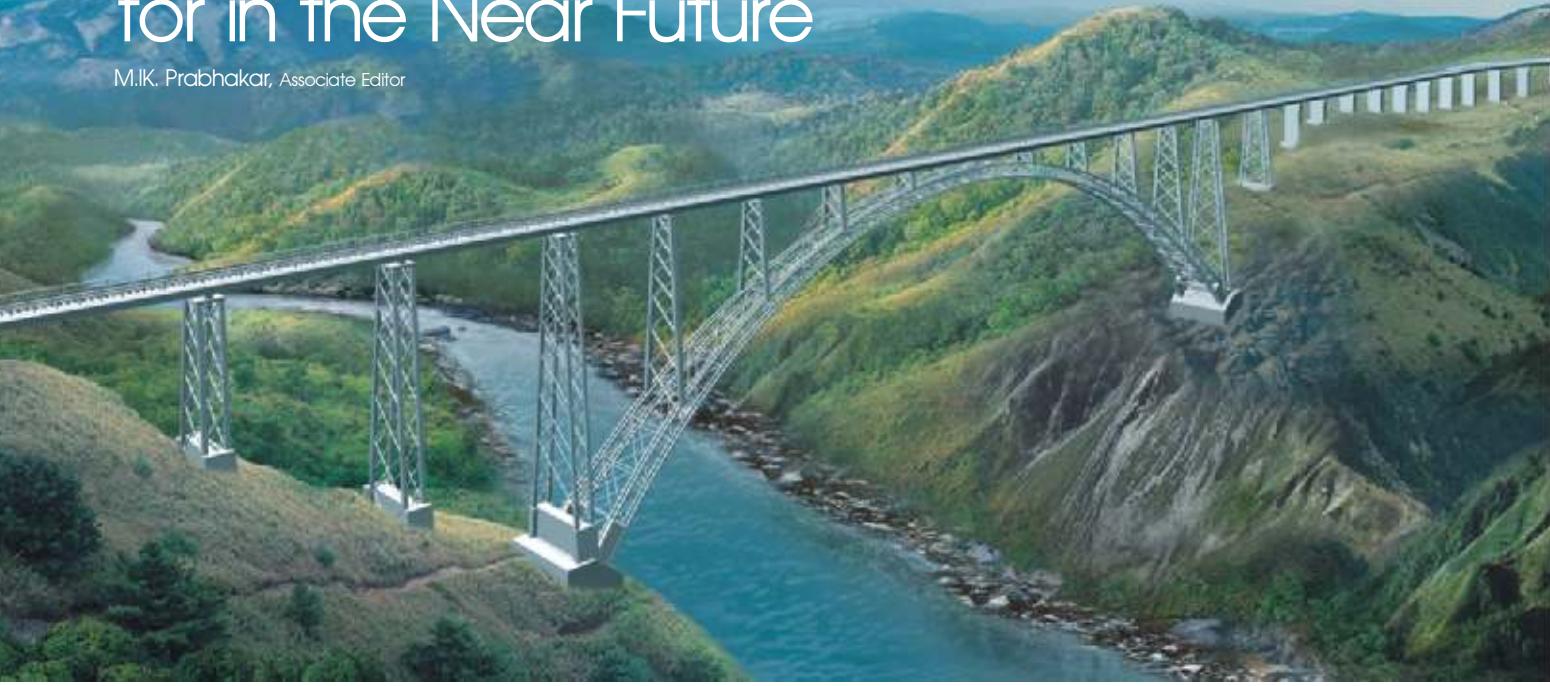
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Mega Projects to Watch Out for in the Near Future

M.I.K. Prabhakar, Associate Editor



The last two decades have seen the construction industry witness more mega projects in a quick period of time than in anytime during the history of mankind. All sorts of achievements hitherto considered next to impossible are now being accomplished. Whether it is constructing the tallest building or the longest bridge, the realms of possibility for engineers and architects now know no bounds. In this scenario it does not come as a surprise that India too has jumped into the mega projects bandwagon in a major way. From vast stretches of highways to off-shore oil projects to mammoth power plants, mega projects are now becoming part of the construction scene in a big way. Let us take a look at some that are expected to be the focus during the 12th Five Year Plan period (2012-17).

Jaitapur Nuclear Power Project

With most parts of the country reeling under power crisis, it is but obvious that mega power projects are in news. While coal-based thermal power projects don't generate much attention,

nuclear power projects have been for all sorts of reasons. While the Kudankulam power plant project has been receiving a lot of attention, there has been silent progress made in the case of the Jaitapur Nuclear Power Project, which when completed is slated to become the largest nuclear power generating station in the world by net electrical power rating. The 9900MW power project at Madban Village of Ratnagiri district in Maharashtra will have 6 European pressurized reactors designed and developed by Areva of France, each of 1650 MW.

The state-owned Nuclear Power Corporation of India Ltd (NPCIL) and French Engineering major Areva S.A have signed a multibillion agreement valued at US\$9.3 billion for this project, which is expected to become a landmark in the country's modern history. With respect to this particular project, it is expected to cost about ₹ 20 crore per MW capacity as compared to ₹ 5 crore per MW in the case of a coal-based power plant.

Interestingly this project is among the several that are being planned in the

coastal strip of Maharashtra spanning across, Sindhudurg, Raigad, and Ratnagiri districts.

Chenab Rail Bridge

With neighbouring China making rapid strides in the field of railways engineering, could India be left far behind. The construction work on what is expected to become the world's highest rail bridge once completed in 2015 has started. The rail bridge over Chenab River in Jammu & Kashmir's Reasi district will be at 359 metres (1,180 feet) above the river bed, a good 35 metres taller than the Eiffel Tower and five times that of our very own Qutub Minar.

The bridge is part of the ambitious Udhampur-Srinagar- Baramulla rail link project which is expected to become the vital link between the Kashmir valley and the rest of the country. The bridge will span 1,315 metre when completed. About 25,000 metric tonnes of steel is being used in the construction process of the bridge considered to be an engineering marvel, taking into account the fragile geology of the region.

The bridge is part of the several bridges and tunnels which make up the Katra-Laole section of the project. Another, smaller, equally impressive arch bridge in the link will be the 657 m long 189 m high Anji Khad bridge between Katra and Reasi.

Since wind speeds at the height of the bridge often cross the 250kmph speed, trains crossing the Chenab Bridge will not be allowed to cross it if the wind speed reaches over 90 kmph.

Siang Power Project

While nuclear power projects may have attracted national attention for several reasons, there has been one project announcement in recent times from NTPC for a hydel power project that has been constantly in news.

The nation's biggest power company has evinced interest in setting up a 9,750 MW hydel power project at Siang in the north eastern state of Arunachal Pradesh. The project investment is pegged at about ₹ 1 lakh crore. The project is expected to be completed over a period of 10 years and when completed would be the second largest hydroelectric power project in the Asian continent after the Three Gorges Dam in neighbouring China.

Incidentally building of dams across the Brahmaputra has been a source of friction between India and China for a long time now. China had already made its intentions clear that it wants to construct a series of hydroelectric projects on Yarlung Tsangpo, the name the Chinese use for the Brahmaputra. With the project proposal expected to be cleared



soon by the Arunachal state government, the project could become a landmark for the power sector.

Mumbai Trans Harbour Sea Link (MTHL)

If the Bandra-Worli Sea Link in Mumbai is gearing up for competition in terms of project scale in the form of the Mumbai Trans Harbour Link (MTHL). Also known as the Sewri-Nhava Sheva Trans Harbour Link, the 22 km freeway grade road bridge will connect the Island city of Mumbai with Navi Mumbai, its biggest satellite city. On completion the bridge would be the longest sea bridge in the country. The sea link will contain a 6 lane highway and is expected to be completed around 2017.

The MTHL will begin in Sewri in South Mumbai and terminate at Nhava Sheva. Estimated to cost about ₹ 10,000 crore, the project is expected to pick up steam soon after the Jawaharlal Nehru Port Trust (JNPT) has decided not to demand the realignment of the link. In principle approval for the project has been given and the Mumbai Metropolitan Region Development Authority (MMRDA) will be building the bridge in collaboration with a private consortium chosen through a bidding process, for which about 70 hectares of land has reportedly been already acquired.

The project has been given the green signal with an initial viability gap funding of ₹ 1,920 crore recently provided by the





Union Finance Ministry, which paves the way for the appointment of a contractor and starting construction in the right earnest soon.

Dedicated Freight Corridor (DFC)

The Dedicated Freight Corridor (DFC), consisting of the Western DFC and the Eastern DFC is all set to transform the way goods are transported in the country. The two corridors will span a total length of about 3,300 km and is being built by a special purpose vehicle, Dedicated Freight Corridor Corporation of India (DFCCIL).

While work is expected to begin any time now, the commissioning of the DFC in phases is forecast to begin from December 2015. The Eastern Corridor would start from Ludhiana in Punjab and pass through the states of Haryana, Uttar Pradesh, and Bihar before terminating at Dankunj in West Bengal, while the Western Corridor will begin from Dadri in Uttar Pradesh to Mumbai in Maharashtra, passing through the states of Haryana, Delhi, Rajasthan, and Gujarat.

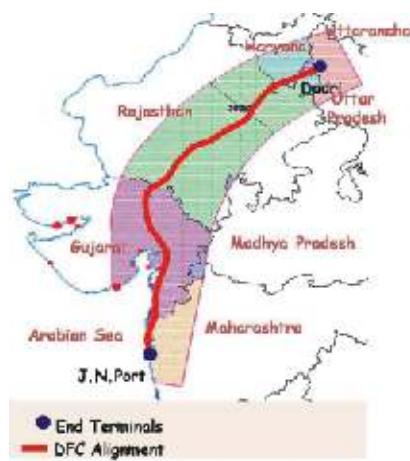
Over 80 percent of the land for the project has reportedly been acquired by the railways for the project which is expected to usher in a new era of economic prosperity in the nine states through which it will be passing. The contract for track work is expected to be awarded after the acquisition of land for another 1000 kms, as revealed by the

Union Minister for Railways, Mr. Pawan Kumar Bansal, who had reviewed the project recently.

Delhi-Mumbai Industrial Corridor (DMIC)

The most ambitious infrastructure project ever in India, almost everything related to the Delhi-Mumbai Industrial Corridor (DMIC) has been attracting headlines in recent times. The Centre had in September 2011 approved an assistance of ₹ 18,500 crore which would be spread over a period of five years for kick starting the project. While the project could end up taking over a decade to be completed, the next five years could witness the majority of the construction work.

The mega infrastructure project worth US\$ 90 billion with collaborative



partnership from the Japanese government will cover a length of 1,483 km between the two metros of Delhi and Mumbai. The project will consist of nine mega industrial zones. It will also have a 4000 MW power plant, three ports, six airports, a high speed freight line, and a six lane intersection-free expressway.

The land acquisition process has already been initiated by all the states involved in the project. The project is expected to generate employment for 3 million and convert the region into a global manufacturing and trading hub. In fact, in Uttar Pradesh alone an estimated investment worth ₹ 75,000 crore is expected to be generated by the mega project.

World One Tower

Giving stiff competition to all mega infrastructure competition was one project in the real estate sector, which stood out for it's the sheer audacity of what is being attempted at a time when the sector is going through one of its worst phases and therefore got into this list despite it not being in any way connected to the nation building activities mentioned here. The 117-storey World One tower that will be close to a kilometer tall is being built on the 17 acre plot of the erstwhile Shrinivas Mills at Lower Parel, Mumbai.

The project that is expected to be completed in phases commencing from 2014 will also have another marquee high-rise, the 'World Crest', which will be soaring to a height of 700ft. The project will also consist of five acres of landscaped area. The World One tower will have an observatory on the 99th floor at a height of 1000 ft.

The architect of the project is PeriCobb Freed & Partners while Leslie E. Robertson Associates is the structural engineer for the project being promoted by the Lodha Group. The building will be LEED Gold certified once completed. The apartment prices in the tower are expected to start from ₹ 7.5 crore. A Giorgio Armani super luxury apartment in the world's tallest residential building was unveiled for a price of ₹ 50 crore sometime ago. □

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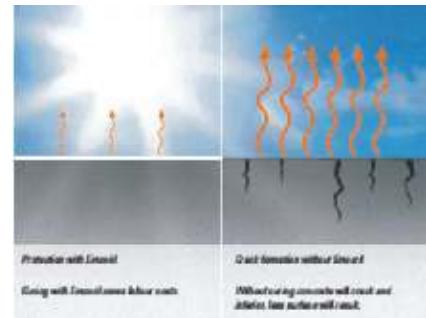
EMCORIL-AC Acrylic Based, Membrane Forming Curing Compound

One constraint in civil construction is the curing of concrete once it has been cast and the formwork is removed. Curing done by conventional methods cannot be ensured to its optimum efficiency when it is done with water. The strength and durability of concrete not only depend upon the correct composition and placing of concrete but also on proper curing. The principle of curing is to prevent the evaporation of the capillary water in the concrete so that sufficient water is available for complete hydration. This leads to better end hydration products and avoids surface dusting and plastic shrinkage.

The conventional methods of curing like water spraying, covering with wet burlaps, polyethylene sheets etc, are not only time consuming but also start after the initial evaporation of water and after the appearance of the first cracks. Ideally curing should begin as soon as possible after the casting of concrete. Emcoril AC is an acrylic emulsion based

membrane forming curing compound, to be brushed or sprayed on the fresh concrete only once, at initial stage which is the critical hardening period of concrete or mortar. It forms a seamless film on the surface of the fresh cast concrete and mortars, which arrests the evaporation of water from the capillaries and prevents quick drying of the concrete, thus avoiding the cracks and enabling the concrete to hydrate efficiently.

Emcoril-AC should be applied as soon as possible after disappearance of water sheen from the surface. If the concrete is dry, it is recommended to fog down the surface before application of Emcoril-AC. Emcoril-AC can be applied by brush or by normal knapsack sprayers having suitable nozzle. In case of larger areas motorized continuous spraying devices can be used. The nozzle of the spraying device should be held about 0.7 to 1.0 m distance from the surface and it should be ensured that the complete area is covered. The pump pressure must be maintained



throughout the operation to obtain a fine spray.

Advantages of EMCORIL-AC

- Emcoril AC protects green concrete against burning by acute sunrays
- Particularly suitable, where early plastering is required
- Optimum hydration leading to stronger end hydration products
- Does not affect normal setting process of cement
- Minimizes and heals shrinkage / micro-cracks at early stages of concrete setting
- Ideal for overhead curing, inaccessible places & places having water shortages
- Better solar reflectance lowering the concrete temperature
- No need for removal before application of subsequent surface treatments

Consumption

Consumption 200 - 250 g / m² Approx.

MC-Bauchemie (India) Pvt. Ltd. Manufactures this product alongwith a host of other construction chemicals in technical and financial collaboration with MC-Bauchemie, Germany. MC-Bauchemie (India) Pvt. Ltd. is an ISO 9001:2008 certified company. □



For further details:

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ABOUT THE CONFERENCE

Perhaps the most used words in any sector these days are complexity, uncertainty and challenges. On introspection, it is observed that this type of situation pervades across time and probably has been more accentuated in present times with enhanced speed of connectivity, be it communication, physical reach or staying abreast of know-how. It is paramount to maintain the competitive edge so as to address the aforesaid adjectives precisely and decisively. Skill sets of good management ensures a successful and desired outcome and these skill sets can be imbued through multifarious indulgence one of them staying abreast of smart management techniques, latest technology and proper resource identification. It is precisely to meet these objectives, that this 2-day National Conference on Project Management in Construction Sector is being conducted on 1st and 2nd March 2013.

The conference aims at enhancing the awareness of the participants to various avenues which would help them hone their all-round skills and professional knowledge, vitally required to successfully overcome challenges in their respective domains and as deliberated above. Some of the topics that would be discussed are:

- Ways to Manage Projects successfully by directly addressing present day challenges

- Optimisation of profitability and efficiency of Projects.
- Most suitable Construction Technologies with respect to Mechanisation and Methods
- Statutory compliances and mitigation of issues
- Legal provisions with techniques for quick resolution
- Resource planning, deployment and control
- Systems and processes to enhance clarity, control and transparency
- Eco-friendly technology and ratings in Construction Industry

This 2-day National level conference will see leading stalwarts and doyens of the Industry present their views on various aspects in the Industry and probably suggest optimised solutions to enhance the efficiency, clarity and professionalism. The conference will be most useful for professionals across the Construction industry, Engineers, Technical Consultants, Support Industry, Academics, Legal fraternity whose practice focuses on Construction Industry, Manufacturers, Traders, Vendors, Solution Providers, Governmental authorities, Decision makers, Architects, Etc.

About INSTRUCT

This Institute was originally conceived as "Centre of Awareness in Construction and Engineering" (CACE) during October 1989 by few like-minded, dedicated professionals to provide vocational training to grass root level and middle level managers in the construction trades and management.

During December 1993, it was registered as "Regional Institute of Construction, Management and Research" (RICMAR) under Karnataka Co-operative Societies Act. In 1997, it was re-named as "INSTITUTE for RESEARCH DEVELOPMENT and TRAINING of CONSTRUCTION TRADES and MANAGEMENT" (INSTRUCT).

The Institute firmly believes that planning, quality, cost, time and productivity have to improve at

every level from the Tradesmen through the Managers right upto the Promoters. Construction constitutes nearly 50% of the total capital outlay in the national development works. Construction activity includes areas such as housing, infrastructure, environment, restoration and up-gradation of civil engineering structures and integrated development projects including water supply, sanitation, soil conservation, irrigation etc.

INSTRUCT has completed a total number of 850 programs including several Seminars/Workshops and has trained nearly 25,000 construction staff. Many of these are organized at the National level. Customized Training Programs in the Construction Sector, is yet another core-specialty of INSTRUCT.

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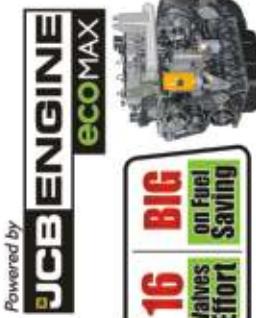
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