

# L&T Earthmover News

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## PC2000 – Star Attraction at IMME 2010

**I**t was a celebration of sheer power and engineering as heads turned and visitors gazed in amazement at the mammoth Komatsu PC2000 Hydraulic Excavator at the International Mining & Machinery Exhibition 2010. L&T's Mining Equipment Business and M/s. Komatsu India Pvt. Ltd., put up an exemplary show at the 10th IMME 2010 held from 10th to 13th November 2010 in Kolkata. Billed as Asia's largest event for the

Mining industry, IMME 2010 brought in a number of leading lights from across 22 countries to showcase their technological strengths and manufacturing prowess.

PC2000, the 200 Ton Hydraulic Excavator and the largest-ever machine displayed in any exhibition in India, occupied prime space in the Salt Lake Stadium. L&T-ites took the opportunity to escort the customers by the specially-erected staircase to take a closer look at

the PC2000's unique features and spacious cabin. As cameras clicked away to capture the 'rare visitor', there were many who preferred to get into the huge 12 Cu. M. bucket for a quick photo session!

Other equipment on show at the stall were the giant Komatsu HD785-7 Rear Dump Truck, rolled out from Komatsu India Pvt. Ltd.'s

*Mr. Ujjal K. Upadhaya, Chairman, EMTA Group of Companies, alongwith Mr. Gaurav Upadhaya and Mr. Saugat Upadhaya receiving the symbolic key of Komatsu HD785-7 Rear Dump Truck at IMME 2010 from Mr. J.P. Nayak, President-MIPD, L&T in the presence of Mr. S. Raghavan, Sr. Vice-President-Industrial Products & Machinery, L&T; Mr. S.K.Mitra, Executive Vice-President, Construction Machinery Business Sector, L&T and other senior executives of L&T and KIPL.*







Mr. Partha S. Bhattacharyya, Chairman, Coal India Limited being taken around the L&T Stall by Mr. Arvind K. Garg, General Manager-Construction Equipment Business, L&T; Mr. Sandip Ghosh, General Manager-Marketing, Komatsu India Pvt. Ltd. and Mr. Kausik Bose, Zonal Manager-East, Mining Equipment Business, L&T.

Mr. V. Prabhakar Reddy, Managing Director, M/s. VPR Mining Infrastructure Private Limited receiving the symbolic key of Scania P380 Tipper Truck from Mr. J.P. Nayak, as Mr. S.K.Mittra applauds.

state-of-the-art Chennai Plant and Scania P380, the popular 18.8 Cu. M. capacity Tipper Truck from Sweden. Besides, aggregates like reconditioned engine, transmission, pumps and a number of critical spare parts that form the lifeline of the mining equipment were on display. Specially done branding with towering flags and large images of working equipment added to the visibility of the L&T stall.

The outdoor stall was spread over an area of 925 sq.m. of prime space, which included a specially done-up closed stall with meeting halls and a large viewing area. A comprehensive table-top display of genuine parts stressed the importance of this support activity. The Service team was quick to answer customer queries related to value-added offerings from its Service Centres. The opportunity was utilized by the Komatsu Group's representatives to showcase new practices in fleet management solutions, fuel consumption studies and parts management.



Mr. J.P. Nayak, President-Machinery & Industrial Products, L&T led the top management along with Mr. S. Raghavan, Senior Vice-President-Industrial Products & Machinery, and Mr. S.K. Mittra, Executive Vice-President-Construction Machinery Business Sector at the stall. Mr. Arvind K.Garg, General Manager, Construction Equipment Business, Mr. Arun Pai, General Manager, Product Support Department, Mr. D. Banerjee, Head-Mining Equipment Business and Mr. B. Dinakar,







Mr. H.S.Atwal, Managing Director, M/s. G.S. Atwal & Company (Engineers) Pvt. Ltd. alongwith his management team seen atop the PC2000 Hydraulic Excavator at IMME 2010.



Mr. H.M.Bangur, Managing Director, Mr. Prashant Bangur, Executive Joint President and Mr. Gopal Daga, Vice-President, Shree Cement seen with Mr.J.P.Nayak, Mr. S.K.Mittra and Mr. A.K.Garg.



Mr. D.C.Garg, Chairman-cum-Managing Director, Western Coalfields Limited during his visit to L&T Stall in conversation with Mr. Kausik Bose and Mr. Rajat Chakraborty.



Mr. G. Nagaraj Venkatesh, Director (Mechanical), DGMS, Dhanbad, in conversation with Mr. B. Dinakar, Head-CMTB, L&T; Mr. D.Datta, DGM, MEB, L&T and Mr. M. Rajendran, DGM, Komatsu India Pvt. Ltd.



Mr. Ansuman Das, Director (extreme right) and Mr. S.R.Nayak, DGM (Mechanical), National Aluminium Company being taken around the L&T Stall by Mr. D. Banerjee and Mr. Kausik Bose.



Mr. Pramod Unde, Director & COO, Sesa Group alongwith Mr. Chetan Sawant in discussion with Mr. D. Banerjee, Head-MEB, Mr. Rahul Mehta, Zonal Manager, CEB-Pune and Mr. A.K.Datta, Zonal Manager-West, MEB.



Mr. G.V.Suryanarayana, CGM(CHP & OCP), SCCL (centre) seen with Mr. A.K.Garg, GM-CEB, Mr. Arun Pai, GM-PSD, Mr. P. Perumal, Head, Service Centre-South and Mr. D.B.Pai, Zonal Manager-South, MEB.



Mr. Sunil Rungta, Director, Rungta Projects Limited (centre) seen with Mr. K. Krupanand, Mr. S.K. Bhattacharjee, Mr. Kausik Bose, Mr. D. Banerjee, Mr. K.K. Ghosh and Mr. D.B. Pai.





*Mr.V.K.Hamirwasia, President, and Mr. S.R. Sharma, Associate Vice-President (Mines), Birla Corporation Limited in discussion with Mr. D.Banerjee and MEB team.*

Head-Construction & Mining Tipper Business actively participated in the daily events.

Scania P380 Tipper Truck, with its dashing colour and dynamic body, was of great interest to the visitors as well. Keen to expand its footprint in the Indian market with its high efficiency and drivability, the Scania team was showcasing on the improvisations made on the product over the years.

Confederation of Indian Industry organized IMME 2010 in association with Ministry of Mines, Government of India and Coal India Limited. Australia was the Partner Country at the exhibition with 50 exclusive stalls and Germany, the Focus Country. Coinciding with the



*Mr. Manoj Agarwalla, Director, Dhansar Engg Company Pvt. Ltd. gets a feel of the operator's cabin of PC2000 at L&T Stall. Also seen are Mr. Harsh Agarwalla and Mr. Parimal Himatsingka.*

event, the Global Mining Summit addressed a whole lot of issues ranging from accelerating investments, environment and safety issues to making Indian mining sector globally competitive.



*Mr. K.A. Sravan Kumar, Sr. Dy General Manager-Parts, L&T seen with the overseas team of Komatsu Ltd. which had put up an impressive table-top display.*







Mr. Kishore Rout, Proprietor, M/s. SN Jyoti Associates receiving the symbolic key of L&T-Komatsu machine from Mr. S. Chatterjee, Sr. Deputy General Manager-Marketing and Mr. Mukesh Tiwari, Territory Manager, CEB-Bhubaneswar in Angul, Orissa on 2nd November 2010. Mr. Rout had placed order for 9 machines comprising L&T-Komatsu PC300LC-7 & PC200-6 Hydraulic Excavator and Komatsu 39EX Dozer.



Mr. V. Senthil Kumar, Managing Director, M/s. Gomathi Sankar Constructions (second from left) receiving the symbolic key of L&T-Komatsu PC130-7 machine from Mr. Ram Subramanian, Territory Manager, CEB-Madurai.



Mr. Prashant Jadhav of Talegaon being felicitated on receiving the 100<sup>th</sup> L&T-Komatsu PC71 Hydraulic Excavator by Mr. Prasad Kulkarni, Manager, M/s. Dhariya Infrastructure Development (P) Ltd. CEB Pune-DIDPL Team achieved this magical figure of 100 nos. of PC71 machines within a 9 month period of the financial year.



L&T-Komatsu PC200-6 machine key being handed over to Mr. Sukhveer Singh (in centre) of M/s. Amit Earthmovers by Mr. D.V. Singh, Territory Manager, CEB-Delhi. Mr. Sanjay Koti, Sales Engineer, CEB-Delhi is also seen.



Mr. S.K.Bhattacharjee, Territory Manager, CEB-Jamshedpur presenting the symbolic key to Mr. Harilal Mahato, Proprietor of M/s. Harelal Construction Co in Chandil, the hub of stone quarry and sand mining in the East.



Mr. & Mrs. Ajay Kumar Goel receiving the L&T-Komatsu PC200-6 machine key at Obra, Uttar Pradesh from Mr. C.N. Pathak, Sales Engineer, M/s. Chintamani Enserve Pvt. Ltd. Mr. R.N. Singh, Dealer Coordinator, CEB-Lucknow is also seen.





At the handing over ceremony of L&T-Komatsu PC130-7 machine to M/s. Shiv Shankar Stone Crusher Company are seen Mr. Shiv Shankar (in centre) and Mr. Rakesh Gupta (fourth from left), Territory Manager, CEB-Jaipur.



Mr. O.P. Bansal, Territory Manager, CEB-Chandigarh greeting Mr. Sher Singh(extreme right) at the handing over of L&T-Komatsu PC300 LC-7 machine in Himachal Pradesh.



Mr. Vivekanand Mahato, Proprietor, M/s. Shibrum Mahato & Sons receiving the symbolic key of L&T-Komatsu machine from Mr. S.K.Bhattacharjee, Territory Manager, CEB-Jamshedpur.



Mr. M.K. Tiwari, Territory Manager, CEB-Bhubaneshwar handing over the symbolic key of the 200th L&T-Komatsu PC71 machine sold by the Dealer, NKB Industrial Products Pvt. Ltd., to Mr. Sanjib Kumar Pattanaik in Cuttack in the presence of Mr. J.K.Thacker, Director, NKB.



Mr. Dilip Mahato, Proprietor, GM Enterprises being congratulated by Mr. S.K. Bhattacharjee, Territory Manager, CEB-Jamshedpur at the handing over function of L&T-Komatsu PC130-7.



At the handing over event held for M/s. Maa Vindhyawasini at Obra,UP are seen Mr. Chandrabhusan Gupta, Owner; Mr. B.S. Patel, Partner; Mr. Sanjay Verma and Mr. C.N.Pathak of M/s. Chintamani Enserve Pvt. Ltd.

## PC300LC-7 highly suitable for rock excavation: Mr. Mahendra Agrawal

Providence led Mr. Mahendra Agrawal to the abode of Lord Balaji in Tirupati in 1992 and this brought about a turnaround to his life. Inspired by the darshan, he established M/s Shree Balaji Borewells in Bhopal and took up contracts for sinking borewells. He eventually made it to the top in rock excavation in Central India – addressing the demands of Madhya Pradesh and Chattisgarh States.

Close to the success of the borewell business, he diversified. The drilling and blasting project which he executed in 1993 in Indira Sagar brought him accolades. With this new found confidence, he took upon a humongous project in 1995 with M/s. JP Associates for loading and transportation of 7 lakh Cu.M. sand from the river-bed utilizing a fleet of hired machines and spread over 5 years.

In 1998, he bagged the earthwork contract for the Indore Bypass project, followed by another contract in Indira Sagar Project for removal of 3 lakh Cu.M. soil in 60 days. This necessitated him to purchase the first L&T 90-3 machine and a few dumpers. Those were the tough days when he had to spend a lot of time at the site to see things happening and learn the nitty-gritty of excavation and deployment of machinery.

In the course of time he took up many projects, some of them being the excavation work for Omkareshwar Dam, Rewa Bypass Project, Indore-Kalghat Project and Kol Dam Project in Himachal Pradesh. Each of them derived challenges for him and taught him to strategize and prioritize the work according to the local requirements. To hasten up the work he looked for fleet augmentation and came into contact with L&T-Komatsu PC200-6 machines. He was clearly overwhelmed by their performance and placed order for both PC200-6 & PC300LC-7 excavators.

Today, Mr. Agrawal is a proud fleet owner of 4 nos L&T-Komatsu PC300LC-7 and 10 nos PC200-6 machines. Says Mr. Agrawal, “L&T machines are certainly efficient in terms of technology and power. They have kept up my commitment for various jobsites, delivering the right productivity each time.”

He continues, “L&T-Komatsu PC300LC-7 is highly suitable for rock excavation. We have tried with rock



Mr. Mahendra Agrawal

bucket application and found the results excellent.” Thanks to Balaji Borewells, L&T-Komatsu machines have since gained enormous visibility in Central India and that has helped grow many folds. Mr. Agrawal’s track record of good relations with the financiers and prompt payment have enabled him to retain credibility in the market.

M/s. Balaji Borewells relies on its trustworthy management team to run the daily business. Mr. Manoj Misra is the Chief Operations Officer with Mr. Shekhar, Mr. Vinay Sen, Mr. Sanjay Tiwari and Mr. Shailendra Dubey taking care of the core issues and project detailing. The 400-strong workforce swear by the values of hard work and professional ethics which Mr. Agrawal is known to practice and have inculcated in the firm as well. He keeps a pulse on all projects personally and visits 2 to 3 sites each month.

“Field Service is a crucial issue and L&T has been giving us the best support. Even as our equipment population goes up, we expect L&T team to give us technical advice and parts support”, says Mr. Agrawal, who has established small workshops for site repairs. Providing the operators with safety equipment, hands-on training, staff housing and a site mess have been his priority.



Most of his projects are located in far-flung areas. But Mr. Agrawal prefers to scrupulously follow all regulations with regard to ground safety and blasting norms. Thanks to his initiatives, the firm has been able to maintain lowest accident rate at the sites. It has been a long walk for Mr. Mahendra Agrawal who started off as a grain merchant's son from Kategaon village many years back.

The future is bright and beautiful for M/s. Shree Balaji Borewells with Mr. Agrawal ready for a new innings, which shall see the firm take up a bigger pie of infrastructure projects and execution of roads on turnkey basis. He continues to seek inspiration from Lord Balaji and makes it a point to visit Tirupati annually. "This is because all my success I owe it to the lord", he declares humbly.

## L&T-Komatsu Machines are Reliable: Mr. Nilay Jain



Mr. Nilay Jain

**B**ehind the soft exterior of Mr. Nilay Jain, Managing Director, M/s. Saneer Infrastructure Pvt. Ltd., lies an astute businessman who believes in the goodness of man and works towards bringing fairness in his transactions. Passing out with an engineering degree from Vidisha, Mr. Jain worked briefly for a while before donning the mantle of a contractor in 1984. With initial capital borrowed from his parents and banks as well, he purchased 2 hot-mix plants and set up 2 crushers in Chindwara and Seoni.

Mr. Jain showed prudence in his operations by purchasing a few equipment like motor grader, backhoe loader and hydraulic excavator as he began road infrastructure works in a big manner. From recarpeting the bituminous layer and initial earth works to construction of the complete roads, Mr. Jain went ahead to take up jobs in Sehore, Balaghat, Seoni and Chindwara in Madhya Pradesh.

As Mr. Jain gathered from strength to strength, he moved into the next league where performance guarantee of

5 years had to be extended for jobs under Madhya Pradesh PWD, National Highways Authority of India and Central Road Fund of Ministry of Surface Transport. This required careful planning and execution with a strict check on the material proportion and methodology and he often had to spend long hours monitoring these. Today, he has a huge team of civil engineers and site technicians who make sure that the quality stipulations are met.

Mr. Jain believes in using his own machines to carry out tasks and has since expanded his fleet to include L&T-Komatsu PC130 and PC200-6 machines and Komatsu Motor Graders as well. "Aap ka machines to badiya hai", he says with a chuckle. "Even in remote areas, we find that the machines are quite reliable", he adds.

He remembers the 65-km stretch in Balaghat-Baihar sector, where he had bagged a contract to execute road construction job in the dense forest and had to deal with the Naxalites. As he began his work, he realized that to make the project happen he had to win their confidence. All he did was to engage daily labourers from the local villages who were more than happy to get good remuneration without having to trudge long distances for work. He managed to finish the project in five months time. "When you speak with affection and friendship, things happen automatically. Though I had to absorb losses, it was my commitment to complete the work", philosophises Mr. Jain.

Mr. Nilay Jain is aware of the dangers that this sector is fraught with often battling innumerable obstacles all the way. He says the only way out is to maintain high standards of professionalism and good workmanship, "This alone shall help us in the long run", he says with a smile.



## PC 200 – Bhagwan ne banaya ise: Mr. Vikas Somani



(L-R) Mr. Vaibhav, Mr. Vikas & Mr. Ashok Somani

**S**hujalpur-based Mr. Ashok Somani and his younger son Mr. Vikas share a great admiration for L&T-Komatsu PC200-6 machine. His wife, Mrs. Triveni Somani and elder son Mr. Vaibhav too vouch for its excellent productivity. So enamoured is Mr. Vikas Somani by the machine when he utters ‘Bhagwan ne banaya ise’ (God has created it!)

Mr. Ashok Somani hails from Ujjain and had shifted to Shujalpur soon after his marriage. The initial years saw the couple overcome a difficult period and eventually set up a medical shop. In 1997, he got into tubewell repair business and was fairly successful. A decade later, he ventured into repairs of interior roads with a hired excavator. Buoyed by the enriched experience, he purchased the first L&T-Komatsu PC200-6 machine in 2008 and formally entered the hiring segment with the firm M/s. Balaji Earth Movers & Borewells.

Soon after, Mr. Ashok Somani roped in his sons at a young age who actively got involved in the day-to-day operations. The business grew and the Somanis acquired more L&T-Komatsu PC200-6 machines to keep pace with the infrastructure projects and road development. Initially the machines went for hiring into Maharashtra and Madhya Pradesh for road construction, earthwork and canal-cutting. Today, the machines are engaged in big projects in Kangra Valley (Himachal Pradesh), Ahmedabad-Godhra Project, Manpur-Indore Project, industrial townships and airport expansion work. Incidentally, the first PC200 purchased by the Somanis has crossed 9000 hours and is going strong.

The Somanis prefer to hire out equipment only to reputed firms for fixed periods and monitor the equipment health on a continuous basis. Their operators are handpicked from Jharkhand for their experience and attitude and are deployed with the machines to work on distant projects. “We agree there are many brands in the market but our preference is always for L&T-Komatsu PC200”, declares Mr. Somani. “PC200 has strong structures and hence could easily handle the most toughest of applications”, adds Mr. Vikas Somani.

While Mr. Vaibhav Somani handles accounts and purchase, it is Mr. Vikas Somani who coordinates machine deployment and customer liaison. He is fully involved in gauging the complexities of various job-sites and the customer demand for trouble-free equipment. Mr. Vikas Somani works end-to-end with the deal, often travelling to customer sites and talking to his operators on equipment maintenance and diagnostics.

Over the years, the Somanis have developed a credible network in the hiring market and could mobilize as many as 20 machines in one go. Their speciality lies in offering custom-made packages in the hiring segment with the assurance of best machine and productivity. Says Mr. Ashok Somani, “The underlying risks in the hiring segment are unseen but many including inhospitable terrain and hostile crowds. But we need to resolve them all. This alone will give us an added edge”.

The Somanis want to expand and acquire more excavators and tippers, so that they could bid for road projects. The road map for their future is ready and they are raring to go.



## L&T-Komatsu Machine is like an Earning Member: Mr. Nitin Jaiswal

**L**&T-Komatsu machine is very much a part of our family”, remarks Mr. Nitin Jaiswal, Managing Partner, M/s. M.J. Agency, Indore. “It has since grown to become an earning member,” he says with unbridled joy. Mr. Jaiswal is among the new-generation businessman who thinks and lives differently. He operates in the rental segment and does not hesitate to operate the machine if need be.

Many years back, young Nitin passed out of a missionary school with the dream of becoming a doctor. But he did not lose hope when things did not happen. He switched tracks to enroll for B.Sc (Pharma Chemistry) and followed up with MBA from Devi Ahilya Viswavidyalaya. He signed up with a FMCG multinational and began his career marketing toothpaste to the dentists. This grounding in field sales taught him tough lessons in understanding brands and building customer linkages. Two things he feels important are customer trust and product innovation.

He decided to join his father who was a registered contractor in Public Health Engg Department of the Government of Madhya Pradesh. One of the major contracts which they bagged from Indore Municipal Corporation was for tubewell maintenance. He signed up for clean-up job of Nelwad tank. He hired a backhoe loader for relocation of a pipeline and when the operator did not turn up, he sat in the driver’s seat himself!

At the Special Economic Zone coming up in Pithampur, he took up a 9 km pipelaying project buying up L&T-CASE 770 machine for the purpose. This execution gave him a lot of experience and brought him face to face with local activists as well. He realized that there was untapped potential in storm water and sewerage management and set about capitalizing on it. He found the Hydraulic Excavator an excellent substitute for the conventional crane and could handle much more work, while on the flourosis project.

Ring road was a big challenge and participation in the super corridor project with M/s. Dilip Buildcon gave him exposure in cutting roads from the high mountains and relaying of various contours. This was the place when L&T-Komatsu PC200-6 made its entry and he found



*Mr. Nitin Jaiswal*

it highly versatile and dependable. The machine was comfortable in both the hard rock area as well as soft soil. He decided to expand his fleet with more excavators and tippers as he went on hiring equipment for more projects like the GAIL pipeline project in Ujjain and the Indore-Ujjain Road Project. He has tried the rock breaker attachment and finds it even more acceptable.

One of the major development shifts in Madhya Pradesh, Mr. Jaiswal observes is the grassroot level administration in the execution of projects from the centralized system to the panchayat raj in 1993-94 which brought in reforms and a big demand for new business.

“When I had a problem with one of the machines, your L&T team replaced the recon engine in no time. That way I did not lose on the machine’s productivity,” says Mr. Jaiswal, who finds the back-up support from L&T’s MP team a great blessing for people operating in rental space, like him. “Because the machine downtime badly affects our credibility”, he adds. He has made sure that all his operators are smart and understand the equipment thoroughly. He also makes sure that the field force sticks to the maintenance schedules and uses genuine spares.

Mr. Jaiswal is happily married to his classmate, an MCA who worked with a private bank and later quit the job to take care of the home and son. He firmly believes in maintaining lasting relationships with customers, for he feels that alone could bring in more business.



## PC 200 is Way Ahead of Other 20 Ton Models: Mr. Puneet Agrawal

Few are aware that Mhow Cantonment, located on the outskirts of Indore, is the birthplace of Dr. B.R.Ambedkar, one of the India's illustrious sons and the father of Indian Constitution. Just a stone's throw from Ambedkar Bhavan is the spacious Head Office of M/s. Prakash Asphalt and Toll Highways (India) Limited (PATH) set in the sylvan surroundings and led by Mr. Puneet Agrawal, its dynamic Managing Director.

Mr. Agrawal's grandfather, who was with the British Army, was posted in Mhow and had settled there after resigning post-1942 *Bharat Chodo Andolan*. He had established a firm which took up construction of bridges and pioneered toll collection for Indore-Khalghat Bridge on the Narmada river, way back in 1955 in the State of Madhya Pradesh, which used to fetch Rs 5,000 annually. The present collection is Rs 20 lakhs per day!

A third generation businessman to have entered into road construction, Mr. Puneet Agrawal is a Post-Graduate in Commerce from Devi Ahilya University. The early years saw him enter the business on a diffident note but full of optimism. He braced up with small contracts using hired machines and looking into the nitty-gritty of work. He topped it with acquiring hot-mix plants in 1988 by when, the road sector started showing a lot of promise. Thus began his association with handling bituminous contracts.

The privatization of road sector in 1995-96 brought in a lot of cheer and hastened PATH to take a leap forward. Today, PATH is one of the fastest growing infrastructure companies in Central India with a strong accomplishment of BOT(Build-Operate-Transfer) projects. Some of its key BOT projects completed in joint-venture include Indore-Khalghat Road, Agra-Bharatpur Road, Kondkali-Talegaon Road, Ratlam-Udaipur Road and the Rewa Bypass.

"The role of excavators is crucial in our activity. I have realized that L&T-Komatsu PC200-6 machine is dependable in both performance and productivity. They are way ahead compared to the other 20-ton models in the market in terms of operation and maintenance," remarks Mr. Puneet Agrawal. He has signed up recently for purchase of 6 nos. machines in one lot. "I'm fully satisfied with the machines. In future, I shall go for L&T-Komatsu only," adds Mr. Agrawal.

BOT is certainly PATH's rise to fame. But one of the most difficult times, Mr. Puneet Agrawal remembers,



Mr. Puneet Agrawal

was the earliest project executed by him under BOT Scheme in 1996 in Chattisgarh State. It was the peak monsoon and he had to deploy a huge contingent of labour to go about with the unfinished task of completing the bridge construction. Fearless of the pouring rain, the men draped in raincoats carried out their task of operating machines with professional elan. Mandasaur Bypass was another challenging task in 1996-97 which involved construction of 3 major bridges to be completed in 8 months time.

"The Behrugat project was highly intimidating and threw a big challenge to us in terms of taming the nature. But, we gathered courage and went ahead with cutting and designing roads in the mountain. We had to tow 80 nos. tractors over the steep ghats and executing the synchronous activity. Today the roads have reduced the travel time effectively", says Mr. Agrawal with pride.

While Mr. Puneet Agrawal looks after the finance and progress of the projects, his engineer brother Mr. Nitin Agrawal coordinates the project detailing. Soon PATH will see the arrival of next-generation – Mr. Nipun (son of Mr. Puneet Agrawal), a civil engineering graduate to join the rolls. This, probably, will be followed by daughter Palak who is pursuing BBA, and nephew Sakshan doing post-graduation at Purdue University, USA. PATH employs over 1600 people and has revenues of Rs. 200 crore from construction business alone.

Mr. Agrawal strongly believes in work-life balance. Most days, he winds up his day-long busy schedule of office meetings and site coordination with a game of tennis which is essentially a stress-buster and keeps him on his toes. Given the fact that he has spent most of his life in Mhow, the sense of discipline and achievement is palpable.



## Fundamentals of Excavator Applications

**M**ost readers of L&T Earthmover News are in some way or the other related to this business and know the art of handling their area of operations. We certainly would not like to venture into this arena. But then, we would touch upon the science of earthmoving and deal with some key issues and factors that influence the earthmoving.

By definition, earthmoving is the science of changing the layout of the land, and includes all activities that are required to displace, flatten or reclaim land. Today, earthmoving is extensively used in the extraction of minerals from the earth. This involves operations like excavation, hauling, dumping and re-handling of materials. And since the time mechanization has replaced the manual labour, different types of machines are on offer to do this job. Not just do the job, but ensure that it is highly productive and profitable as well.

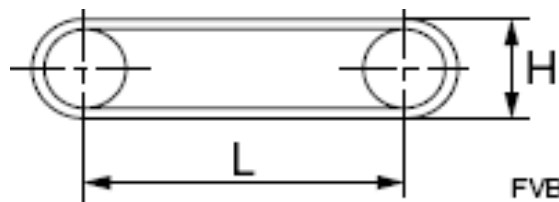
All earthmoving machines could broadly be classified into loading, hauling and load-and-carry machines. Hydraulic excavators, rope shovels and draglines are purely loading machines, while tippers, dump trucks, ropeways and wagons are hauling machines. Wheel loaders, motor scrapers and bulldozers fall in the bracket of load-and-carry machines. The choice of zeroing on a combination of loader and hauling machine or a single load-and-carry machine depends on the distance of movement required. Roughly if the distance to be moved is less than 100 meters, load-and-carry machines like wheel loaders alone can suffice. However if the hauling distance increases, a separate loading machine with a hauling machine must be deployed.

Let us see on some of the aspects of hydraulic excavators here. Normally a hydraulic excavator is selected based on the bucket size or engine HP. The bucket capacity indicates the material that can be excavated per cycle and the engine HP is a measure of the rate of doing work and thus gives an idea of how much an



excavator can produce. But today with a variety of attachments configuration available based on operational requirements, the operating weight of the excavator has also become a standard for classification. Heavier the machine, bigger and more powerful it will be in all respects. A heavier machine will however exert higher ground pressure and if the sub-soil is not strong enough to withstand, application engineers choose wider tracks or swamp shoes depending on the ground conditions.

Ground pressure = Machine operating weight / Total ground contact area where total ground contact area =  $(L + 0.35H) \times \text{shoe width} \times 2$



H = Track height

L = Distance between centers of sprocket and front idler

*(To be continued in the next issue)*