

L&T



Earthmover NEWS

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Customer Newsletter

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Pioneers in Introducing **SUSTAINABLE TECHNOLOGIES**

*Focus: Interaction with
Mr Arvind K Garg on Transforming the future
Mr Vivek Hajela on Green initiatives in product development*





L&T 9020sx

WHEEL LOADER PAR EXCELLENCE



**CEV-IV
compliant**



**RUGGED
RELIABLE
UNBEATABLE**

MADE IN **india** MADE WITH **PRIDE**

Operating Weight : 11,500 kg | Bucket Capacity : 1.5 -3.0 m³ | Rated Payload : 3500 kg

When it comes to material handling, L&T 9020sx is for sure a winner! Powerful engine, High-capacity transmission, Higher breakout forces, Heavy-duty Hydraulic system, Faster cycle time, Comfortable

operator cabin, Lower operating cost, Excellent fuel economy make the L&T 9020sx the best-in-class Wheel Loader. Delivering top-class performance and superb productivity.

L&T Construction & Mining Machinery

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Conditions Apply

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Transforming the Future

- Mr Arvind K. Garg, Senior Vice President and Head, L&T Construction & Mining Machinery, talks about the recent improvements in Hydraulic Excavators and the plans to introduce sustainable technologies

What are the recent improvements and advancements in your excavators to bring higher productivity and efficiency (engine power, faster swing, undercarriage, buckets size etc.)?

We have always pioneered introducing new technologies in the country. Komatsu's latest generation excavators -- PC205-10M0, PC210-10M0 and PC500-10M0 have set new productivity and fuel efficiency benchmarks. They are equipped with a new series of engines, hydraulics and telematics -- Komtrax, ensuring increased productivity with lower fuel consumption. Komatsu has pushed the efficiency envelope on the new series of engines. It has optimised the design parameters to minimise engine peripheral power loss, getting the maximum net HP output in line with the gross HP developed. This ensures that the fuel consumed by the engine is available for productive work by the machines.

The latest version of Komtrax continuously monitors loads and machine utilisation providing valuable insights into energy-saving operations.

What are your plans for alternate fuels like biodiesel and electrification? Do you think electrification is commercially viable on the scale needed to achieve significant carbon reductions in the construction sector in the coming decades?

We currently offer a wide range of biodiesel-compatible Komatsu equipment, including Hydraulic Excavators, Dump Trucks, Wheel Loaders, Crawler Dozers, Motor Graders and Water Sprinklers. We also have technologies for various alternate fuel options. Such product adaptations will be initiated as and when the Eco space becomes suitable for their usage.

We have also pioneered the introduction of electrically powered excavators in India and have recently supplied Komatsu PC3000, electrically driven excavators, for the mining industry in Central India. We are currently working on battery-operated Construction Equipment and are



exploring the possibility of introducing hybrid machines in the near future in India. Environment-friendly technologies are developing very fast and will be the way ahead for the industry.

How are you reducing the wear and tear of your machines to improve their service intervals and increase their lifespan?

"We have technologies for various alternate fuel options. Such product adaptations will be initiated as and when the Eco space becomes suitable for their usage"

Apart from the biodiesel series of equipment, many initiatives have been taken to reduce customers' costs of operations and minimise pollution.

To name a few, Komatsu has developed a new hydraulic filter with nanotechnology to enhance filter change interval from 1000 to 2,500 hours, thus extending filter life and reducing maintenance costs. Eco-white filters have minimised environmental pollution. In addition, Komatsu Oil and Wear Analysis (KOWA) labs provide vital data on equipment health and help us take proactive maintenance steps to improve equipment life.

We have introduced a special heavy-duty undercarriage



Komatsu PC3000, Electric Excavator, was recently supplied to mining industry in Central India

with Abrasion Impact Resistant (AIR) Bushing. This is specially made for the most rugged and demanding requirements of Indian granite and quarry applications. The unique technology increases the life of undercarriages, thus considerably reducing maintenance costs per hour. A new and special variant of the undercarriage allows high travel time on rocky grounds similar to granite and marble mining sites. It features speciality links with improved tread area and link height for considerably longer undercarriage life and reduced operating costs.

Komatsu machines require a hydraulic oil change only after 5000 hours. It is one of the most extended oil change intervals in the industry. With many such customer-centric initiatives, we have always tried to enhance asset life and add value to our customers.

How do you look at the present market conditions?

The Indian Construction Equipment Industry registered a CAGR of over 5% in the last five years despite two years of disruptions during the pandemic. Indian Government's focus on growth driven by Infra development and manufacturing is aiding demand growth. In addition to the

various ongoing infrastructure projects under the National Infrastructure Pipeline valued at USD 1.4 trillion for the period 2020-25, the Government of India has recently launched the USD 1.26 trillion Gati Shakti - National Master Plan for Multi-modal Connectivity, an integrated infrastructure development plan for seamless connectivity for movement of people, goods and services from one mode of transport to another and to facilitate the last mile connectivity to reduce travel time for people.

Additionally, India is expected to have the second-largest metro connectivity globally by 2025, with 982 km being added to the existing 810 km spread across 15 cities. These projects will drive demand and support us in our growth story.

Currently, we have an extensive portfolio of offerings for customers in India ranging from Komatsu Excavators, Dozers, Motor Graders and Loaders, L&T's range of Vibratory Compactors, Wheel Loaders, Skid Steer Loaders, Sand plants, Aggregate Crushing solutions, Tipper Trucks from Scania and a host of attachments to enhance product versatility. We expect favourable demand and growth in all these product offerings. ■

Introducing Sustainable Technologies

■ Mr Vivek Hajela, Vice President and Head, Construction Equipment Business at L&T CMB, talks on the green initiatives and the state-of-the-art after-sales support for customers

What kind of green initiatives are being undertaken on the product development front?

As committed at the COP26 Summit, India is to achieve carbon neutrality by 2070. In line with the government's commitment and as responsible corporate citizens, the Indian construction equipment industry has started moving towards sustainable technologies to reduce carbon footprint and greenhouse effects. These include the introduction of electric vehicles, hydrogen fuel cells and biodiesel.

The Industrial world is sensitive to the environment, and corporates are always looking at newer ways of containing pollution levels. Biodiesel offers an excellent and immediate opportunity for the Construction Equipment Industry to contribute to the COP26 target.

Komatsu, the principal of L&T Construction & Mining Machinery (L&T CMB), has just introduced a range of biodiesel-compatible equipment for the Indian construction and mining industry. L&T CMB will offer after-sales support for these machines. In May, Komatsu India Private Limited (KIPL), the wholly owned subsidiary of Komatsu Ltd., Japan, rolled out India's first mining truck compatible with biofuel from its advanced manufacturing plant in Chennai.

These machines enhance jobsite efficiency, reduce fossil fuel consumption by running on biodiesel blends up to B20 and offer an excellent and immediate opportunity for the Construction and Mining Equipment industry to contribute to the COP26 target. In addition, Komatsu and L&T's product portfolio also include electric excavators and dump trucks for the Mining and Construction Industry.

Our ICT tool—Komtrax, available on Komatsu's range of products - generates energy-saving reports with detailed insights into load conditions and modes which help customers explore methods to improve machine utilisation & efficiency, eventually leading to fuel savings.

What are L&T's plans for electric run equipment?

When the world was still talking of carbon fuel, L&T pioneered the development of Electrically driven Excavators. L&T 90CKE and 300CKE are two products developed in-



house by L&T engineers with electric drive, powered by a 3.3 KV/6.6 KV electric line instead of a diesel engine. While battery technology and development are happening at a brisk pace, we are working on strengthening electric machine technology. We hope to roll out a set of mini-electric machines in the coming years.

What are your after-sales initiatives for your range of products?

L&T is also developing road machinery and has launched four fully indigenous models of compactors, two models of wheel loaders and skid steer loaders, apart from developing special application attachments for excavators

Equip-Care: L&T's Equip-Care programme, a pro-active after-sales support program, seamlessly integrates smart machines, Customers' requirements, and a trained after-sales support team across the country to provide unmatched support experience to our customers. Equip-Care continuously draws information from Komtrax on the machine to plan scheduled services and necessary

interventions in case of any caution/abnormality and alerts in the shortest possible time.



PC500LC-10R Truly Efficient Hydraulic Excavator - the first of its kind in 50-ton class

Suraksha-10000 / MCP-4 Machine care program is another unique, industry-leading initiative from Komatsu and L&T. Under this program, Komatsu's PC205-10M0 and PC210/PC210-LC-M0, PC300LC-8M0, and PC350LC-8M0 machines are covered with extended power train warranties for four years or 10,000 hours (from the date of commissioning of the equipment) bundled with a host of value-added services such as free scheduled service visits every 500 hours up to the end of the extended warranty period, Komatsu Energy Saving Training & Guidance, PM clinics, Komatsu Undercarriage Inspection and Machine health reports. The program ensures "True Peace of Mind" for Customers by taking care of their operation and maintenance aspects of the machines on time.

What are your plans for adding more products to the portfolio?

At Excon 2021, held in April this year, Komatsu launched four new environment-friendly, B20-biodiesel-ready hydraulic excavators and a motor grader to address the emerging needs and technology requirements. These were Komatsu Hydraulic Excavators –PC205-10M0, PC500LC-10R, PC210LC-10M0 Super Long Front and a Komatsu Motor Grader GD535-6.

Komatsu has an extensive portfolio of equipment. Depending on the market requirements, we may introduce new models as needed. L&T is also developing road machinery and has launched four fully indigenous models of compactors, two models of wheel loaders and skid steer loaders, apart from developing special application attachments for excavators. We will continue exploring such developments to complement the range of products from Komatsu's stable. ■



GD535-6 - The next-Gen Motor Grader

PC210-10M0 Breaks the Barrier

- Ten machines have already crossed 11,000 hours of operations since their commission across applications and locations is a clear testimony that they are Truly Efficient!



Our principal, the Japanese Construction Equipment major, Komatsu launched the NextGen Truly Efficient Hydraulic Excavator -- PC210LC-10M0 in 2019. This machine, with much higher forces, capacity and the latest generation of telematics, has changed the Construction Equipment landscape in India. The model combines high productivity, durability and fuel efficiency and successfully replaced the Komatsu PC210LC-8M0 introduced in 2011.

Komatsu has pushed the boundaries of efficiency and leveraged nearly a century of experience with Construction Equipment and technology to build the PC210LC-10M0, which provides up to 20% higher productivity and at up to 20% lower fuel consumption than the previous model.

The machine has since redefined the reliability standards in the 21-ton class segment in India. PC210LC-10M0 is not just fuel-efficient. It is "TRULY EFFICIENT"!

In fact, one of the machines has already crossed 14,000 hours of operations since its commission, while nine others have clocked operation time between 11,000 hours and 13,000 hours across applications and locations is a clear testimony that they are Truly Efficient. These machines have been deployed across applications at rugged sites like

quarries, blue metal mining, road making and material handling.

The PC210-10M0 comes fitted with a new series of engines, wherein they have optimised the design parameters to minimise the peripheral power loss on the engines, getting the maximum net horsepower (hp) output in line with the gross hp developed, ensuring every litre burnt by the engine is available for productive work by the machines.

The PC210LC-10M0 provides up to 20% higher productivity at up to 20% lower fuel consumption than the previous model

Advanced designs incorporated in the engine, including radiator fan viscous clutch technology, optimised fuel injection control, reduction of hydraulic pressure loss by optimising pipe design and enhanced engine-pump matching control, reduce the power

required. It also minimises power loss from heat generation and improves system efficiency making the machine energy efficient.

The patented telematics, Komtrax, continuously monitors the load and machine utilisation, thus providing valuable insights into energy-saving operations. A large LCD monitor is equipped with ECO-Gauge, which constantly provides efficiency feedback to the operator while operating the machine. Komtrax also alerts the operator on long idling and recommends switching to eco-modes based on the usage and load condition. ■

Keeping 'Umling La' Motorable

- L&T Wheel Loaders deployed by the BRO at Umling La are part of a fleet of 25 machines supplied to them in the first lot from a total order of 70 in August from LTCEL, the 100% subsidiary of L&T



Wheel Loaders model WL9020, manufactured by L&T Construction Equipment Ltd (LTCEL), recently procured by Border Roads Organisation (BRO), are now working on the world's highest motorable pass -- Umling La in Eastern Ladakh, at an altitude of 19,300 feet, higher than the North and South Base Camps of Mount Everest, where temperatures can drop to a minus 40 and oxygen level is almost 50% less than at usual places.

The L&T Wheel Loaders deployed by the BRO at Umling La are part of a fleet of 25 machines supplied to them in the first lot from a total order of 70 in August from LTCEL, the 100% subsidiary of L&T.

These special equipment are suitable for operating in rugged terrains – high altitudes and extreme weather conditions. The sturdy machines are fitted with 'Cold Starting Kits', enabling them to work in sub-zero temperatures suitable for the Umling La. BRO, the organisation engaged in serving the nation's strategic requirements, procured them for deployment in strengthening road infrastructure in Northeast, North and Northwest India.

The machines, as part of L&T's contribution to Make in India and the Aatmanirbhar Bharat initiative, are designed and developed by its Product Development Centre (PDC) at Coimbatore and have more than 90% indigenous content in line with Government's vision to promote local manufacturing.

BRO is India's multifaceted, transnational construction

organisation committed to meeting the strategic needs of the armed forces in maintaining the security and integrity of the Nation. It plays a pivotal role in constructing and maintaining operational road infrastructure in inhospitable, far-flung border areas, contributing to the region's socio-economic development.

A few months ago, the Organisation had invited bids as part of the Government of India's efforts to build roads and bridges in border areas. LTCEL bagged the prestigious contract for supplying 70 L&T 9020 Wheel Loaders, its single largest order, against stiff competition from domestic and multinational companies.

LTCEL has been involved in supplying indigenous machines for various strategic initiatives of the Indian Government. It has also supplied machines for varied applications required for UN peacekeeping missions, Public Sector Units (PSUs) and the BRO, and large numbers of private contractors for building India's infrastructure.

The machines, as part of L&T's contribution to Make in India and the Aatmanirbhar Bharat initiative, are designed and developed by the Product Development Centre

LTCEL is engaged in manufacturing a diverse range of Road Construction Equipment such as Vibratory Compactors, Pneumatic Tyred Rollers, Asphalt Pavers, Skid Steer Loaders, Wheel Loaders and Hydraulic Excavators, besides attachments such as Crusher Buckets and Slope Compactors. It also manufactures and markets high-precision Hydraulic Components, Customised Systems for applications in Construction Equipment, Industrial Machinery and other engineering sectors. ■

Fast Tracking Growth

- Designed and manufactured in-house, the L&T 9020 Wheel Loaders come with 90% indigenous content keeping maintenance costs low and are finding acceptance for a large number of applications



What is common for the under-construction part of the Delhi International Airport project, or a bridge being built on the river Brahmaputra, the Ganga Expressway Project, Adani Port at Hazira or the JSW Steel Plant?

They all use L&T Wheel Loader 9020!

Wheel Loaders manufactured by L&T as part of our contribution to Make in India and the Aatmanirbhar initiative are designed and developed by our Product Development Centre at Coimbatore. It has more than 90% indigenous content, in line with Government's vision to promote local manufacturing.

A wheel loader is a piece of heavy machinery used to load and carry materials across a job site. Wheel loaders can haul materials like sand or large objects like rock and debris across distances and are an integral part of a fleet for road construction and upkeep.

Indigenously developed L&T 9020 Wheel Loader - CEV-IV, in the 3.5-tonne category, which features the latest environment-friendly engine, comes with loader bucket options of 1.7 cubic meters (CuM) for heavy materials, 1.5 CuM for rock materials and 3 CuM for light materials. The

homemade machine is making deep inroads into the major segments of the infrastructure sector in India like Airports, Highways and Expressways, Ports, Metro projects, Mining and Quarrying. It is helping India build the nation with a fleet of about 2,100 machines operating at various project sites.

Airports

Two L&T Wheel Loaders are operating at Delhi's Indira Gandhi International Airport, which is undergoing a major expansion. It will see an expanded Terminal 1 (T1) in Palam, a fourth runway, expanded facilities inside Terminal 3 (T3), and a unique 'dual elevated cross taxiway' to increase passenger handling capacity. When it opens in 2023, it will integrate domestic departure and arrival terminals under one roof and double its capacity from 20 million passengers per annum to 40

million passengers.

Two more are operating for the construction of greenfield Navi Mumbai International Airport. Once operational, it will be able to handle yearly traffic of 90 million passengers. The airport covers an area of 1,160 hectares.

This apart L&T Wheel Loaders and Soil Compactors were

Indigenously developed L&T 9020 Wheel Loader - CEV-IV, in the 3.5-tonne category, features the latest environment-friendly engine, comes with 1.7 CuM, 1.5 CuM and 3 CuM loader buckets for handling a variety of materials

used or are in use for building airports at Ayodhya, Deoghar, Guwahati, Kolkata, and Ladakh.

The Wheel Loaders are being used to handle blue metal aggregate into the hopper of ready mix plants that makes the concrete for building the airport and the runway.

Expressways & Highways

Many of our Customers, who are executors for expressway & highway projects, have regularly used the L&T Wheel Loaders. Rapid Infra, one of our Customers, procured them for the Yamuna Expressway, while JS Mining & Construction procured them for the Ganga Expressway Project.

Wheel Loaders to feed aggregates into the Ready Mix Concrete Plant.

Industries

Not just coal or fertilisers, these Wheel Loaders are capable of handling hot and heavy materials too at Steel Plants. For example, for JSW Steel & Power, these Wheel Loaders handle slags extracted from blast furnaces.

Mining & Quarry

Five of the eight coal-producing subsidiaries of Coal India, including South Eastern Coalfields, Mahanadi Coalfields, Bharat Coking Coal, Central Coalfields, and North Eastern Coalfields, have deployed a total of 23 Wheel Loaders at



In the rugged terrains of Arunachal Pradesh and Nagaland in the Northeast, five L&T Wheel Loaders are operational, helping make the terrain accessible and motorable. Additionally, two more L&T Wheel Loaders are operating at the project for building a new bridge across the river Brahmaputra.

Ports

At ports, L&T Wheel Loaders are in regular use for handling different materials. For example, two machines are operational at Vizag Port and one at Kakinada Port for handling fertilisers. The machines also operate at Port Gangavaram and Vizag Port, while eight handles coal at Adani Port in Hazira. The machines have been deployed at Haldia port for moving coal and limestone.

Metro Projects

Bangalore Metro, the much-awaited metro link in the city, and the Mumbai Metro expansion projects are using L&T

various mines for overburden removal, road construction and road clearing at their mines. This apart, Singareni Collieries Company Ltd (SCCL) has deployed 19 L&T Wheel Loaders.

We are constantly looking at increasing the value proposition for Wheel Loaders by making them more versatile and suitable for more applications. We introduced Dozer blades five years ago, and today it is a standard attachment for haul road maintenance in opencast mines.

The L&T 9020 wheel loaders are also operating at Lohardaga Bauxite mines, Limestone mining for cement production, manganese mining and steel mines for large public sector companies.

Some 1000 machines are also used for blue metal quarries spread across Karnataka, Tamil Nadu, Andhra Pradesh, Telengana and Maharashtra.

Other Applications

These indigenously built machines have also found applications in handling sand, china clay, and material handling for tiles manufacturing processes. The L&T 9020 Wheel Loaders are also used for waste handling at some of

our customers' waste handling and processing plants at Municipalities in Indore, Vellore and Mumbai.

The market

Of late, demand for Wheel Loaders has started picking up in the industrial segment. The coal mining sector is also expected to experience good growth following a shortage arising from elevated prices of imported coal and steel on account of improved prospects in the export market.

Wheel Loaders with payload capacities between 3 and 3.5 Ton will continue to contribute to the bulk of demand. Newer applications in industries like steel, coke, cement and general construction for material handling are emerging due to increased mechanisation. Traditionally these sectors were either engaging manual labour or using Backhoe Loaders.

After-sales

At L&T Construction & Mining Machinery, we aim to reach out to customers in 3-4 hours because we believe 'In Service Lies Success'. And in our 76 years of partnering India in nation-building, we have believed superior aftersales service is the key differentiator for customers.

We have a national network of 29 dealers and 115 touchpoints, and 27 territory offices of L&T's Domestic Marketing Network. This means that most sites are within a 3-hour travelling distance, while the response time could be 24 hours in the hilly terrains. Our Central warehouse at Nagpur is strategically located to reach major centres within 24-48 hours.

L&T is also installing tracking capabilities in machines for round-the-clock performance monitoring, timely services and higher uptime. EquipCare, a toll-free facility, allow

customers to record service requirements on a 24x7 basis. The facility provides a deadline within which the service is rendered. They can also register their feedback based on which we constantly improve restoration time with technology as an enabler. We are continually improving our service delivery and creating more value in after-sales.

Conclusion

We are constantly looking at increasing the value proposition for Wheel Loaders by making them more versatile and suitable for more applications. We introduced Dozer blades five years ago, and today it is a standard attachment for haul road maintenance in opencast mines. Due to their faster mobility, dozer attachment is widely used in remote and hilly road construction. We have also introduced a multipurpose bottom opening bucket and multi-tine wood grapple attachment. We firmly believe that the development of newer attachments would immensely increase the acceptability of Wheel Loaders due to faster mobility and reduced costs in various applications. This would also significantly increase demand for these machines as India's construction and infrastructure sector gains momentum.

We believe that Wheel Loader is one of the primary material handling equipment. It offers excellent mobility and cost efficiency for handling any raw material.

India is one of the fastest-growing large economies with a substantial developmental deficit. As the economy grows, urbanisation and infrastructure development requirements will accelerate. This would fuel demand for Wheel Loaders from the sector like general construction, infrastructure, and core industries like power, steel, cement, mining etc. ■



Machines at Medigadda Project

- Ten L&T 9020 Wheel Loaders have been performing tirelessly for three years and logged 7000-8000 hours while handling a variety of materials



As India transforms its Infrastructure, L&T Construction & Mining Machinery – now in its 76th year - is playing a significant role with its portfolio of equipment deployed for diverse projects - roads & bridges, dams & canals, factories & buildings, mines & quarries etc. These machines, from brands like Komatsu, Scania and L&T, with Quality, Reliability and Durability as their hallmarks, have made enormous contributions and created new benchmarks in productivity and performance.

L&T Construction is one of our prominent customers, executing contracts as varied as Hydroelectric Power Projects in the Himalayas, building strategic roads in the Northeast or taming the river waters in the South. These projects have thrown up multiple challenges due to their size, scale, geography, and complexity. With an inventory of more than 200 machines supplied by L&T CMB, including 38 Hydraulic Excavators, 12 Dozers, 40 Wheel Loaders, 76 Tipplers, and 38 Motor Graders, L&T Construction had deployed them in diverse applications to speed up execution for meeting stiff deadlines.

Medigadda Barrage, built on the mighty Godavari River, was a massive challenge for L&T Construction, yet the project was completed in a fast-track mode of 24 months, creating a world record. This barrage is the starting point of the Kaleshwaram Lift Irrigation Project and is said to be the world's largest multi-stage project. The Medigadda Barrage is a significant part of the vital irrigation infrastructure to lift

an estimated 180 thousand million cubic feet of water annually from the river to the Sripada Yellampalli Project to provide drinking water, facilitate irrigation and meet the industrial water requirements of 23 districts in Telangana.

Ten Wheel Loaders (L&T 9020) were among the machines deployed for the barrage project. L&T Wheel Loaders first made their entry in 2016 and have been performing tirelessly for three years and logged in 7000-8000 hours while handling ready mix concrete, loading crusher material, and as well used in general construction. The project witnessed mammoth earthwork excavation of 1.8 crores cubic meters - at the site.

L&T Construction team rolled in a fleet of machines to activate the project at the site, which was highly demanding with rugged terrain. "Initially, the L&T 9020 machines were used for hopper feeding of batching plants, and we found them highly reliable. Later, the loaders were used for other applications as well. Periodic checks were conducted for major components and the loaders performed at their best. At times, when there was a need, the CMB service team was quick to intervene and resolve issues. The best thing was ready access to the support team and their eagerness to help us," said Mr Sanjay Gupta, Sr Manager (Plant & Machinery), L&T Construction.

With strict targets set, it was challenging for the maintenance team to ensure high machine availability at the site. "We did proactive planning and extended 24x7 machine support, which helped us ensure maximum availability. We were continuously monitoring their performance and tracking the machines every 1000 hrs. Working closely with the L&T Construction team, we ensured high uptime of pumps, axles and transmissions," said

Mr Krishna Chaitanya, Service Engineer, L&T CMB.

In another development, L&T Construction has deployed Komatsu WA470-6 Wheel Loaders with Side Discharge Buckets and Komatsu PC130 with tunnelling attachment for tunnel application in Package 2 of the Rishikesh-Karanprayag railway line project in Uttarakhand. Being developed by Rail Vikas Nigam Limited and executed by L&T Construction - Heavy Civil, the project's scope includes tunnel constructions, formations, shafts and ancillary works.

L&T CMB takes pride in supporting L&T Construction in most of its infrastructure development activities. ■

The Barrage, on the mighty Godavari River, was completed in a fast-track mode of 24 months, creating a world record

Contractors Prefer L&T Compactors

- Mr Jaikumar D. Kamath, JGM and Head, Road Machinery Business, explains how L&T Compactors have emerged as the preferred machine for most contractors



How are L&T Compactors catering to different buyer segments on the price front, and on their performance, for meeting the project delivery schedules of the contractors?

L&T's product portfolio includes L&T 1190 Soil Compactor – CEV-IV, L&T 990HF i Tandem Compactor – CEV-IV, L&T 2490 HD Pneumatic Tyred Roller – CEV-IV and L&T 491 Mini Tandem Compactor. L&T Compactors are indeed "Make in India" machines. They are designed and manufactured in India with substantial indigenous content, which is why we have been able to keep costs under control despite a falling Rupee and steep input cost increase over the past few months due to rising steel and diesel prices.

We have emerged as a preferred supplier to most contractors by ensuring we meet customers' expectations of a fair price, prompt after-sales support and timely delivery. We have a very reasonable pricing policy for which customers have shown their faith in L&T by adding machines to their fleet and placing repeat orders. In fact, most customers have seen the reason behind price increases and have been considerate in giving us some leeway in

pricing. We now have many customers with a fleet of 20 Compactors or more.

What presale support is being rendered to contractors for selecting the right product per the job and the construction site condition? Are the materials to be compacted being tested at your end to determine the right tandem, soil and asphalt compactor?

L&T Compactors are indeed Make in India machines. They are designed and manufactured in India with substantial indigenous content, which is why we have been able to keep costs under control.

The L&T Product Development Team possess the technical skill and the know-how to recommend a set of equipment specific to the job a Road Contractor needs to undertake. Machines are selected to ensure that the entire fleet is utilised for better productivity and speed of operations. Recommendations are made, keeping in mind that the Dense Bituminous Macadam (DBM) and the AC (Asphalt

Concrete) follow BIS standards so that compaction results are predictable.

All L&T Compactors undergo extensive field trials, and compaction results are cross verified with samples tested in the laboratory during their validation stage. And as

embankment compaction varies due to different soil conditions, it becomes necessary to prepare test beds at the site to arrive at desired compaction results. Once the number of passes needed is proven on the test bed, it is easy to replicate the results at the site.

What new compaction technologies are available for homogenous compaction to remove voids and increase compaction density without impacting the surface layers?

Compaction by inducing vibrations to realign particles is the most preferred compaction method. The moisture content, the layer thickness and the weight of the roller all play a part in achieving the desired compaction results. L&T offers the complete fleet of compactors, Soil, Tandem, Mini and Pneumatic Tyred Rollers, all catering predominantly to the Road construction segment.

What advancements are being made in the vibratory system for offering different amplitude settings to drive the proper compaction force?

L&T Compactors have a dual amplitude. The amplitude change is achieved by changing the direction of rotation of the eccentric shaft. The compaction forces generated by L&T Compactors are optimised to ensure the best results. L&T has designed the vibration system in-house and has proven to be very reliable for various work sites.

What improved provisions are being made for adjusting the frequency and amplitude as per the compaction measurements and eliminating drum bouncing and the risk of over-compaction?

An intelligent compaction system for L&T machines ensures that the operator gets an alert once the desired compaction is achieved. Over-compaction is undesirable as it does not add value and results in wasted efforts and resources. The intelligent compaction system is an optional feature offered on the L&T machines for easy compaction monitoring.

What measures are being taken through the compact assist system to optimise performance by evaluating material stiffness and enabling fewer passes to achieve the desired material density and reduce fuel consumption?

An intelligent compaction system fitted with the machine optimises the results of the compaction meter, the number of passes and the laying temperature of bitumen. The compaction meter checks the compaction achieved by measuring the rebound on the drum and provides input to the operator on the degree of compression. The operator saves fuel when he stops compacting a bed which has already achieved the desired level of compaction.

Are any recent advancements being made across the



drum width to ensure uniform and consistent compaction with a higher material density?


A higher drum width would result in a lower weight per cm of the drum. While designers try to maximise the weight on the drum module, the constraint is gradeability. A very high percentage of drum module weight in the total weight of the machine makes it difficult for the equipment to climb gradients. L&T has optimised this ratio during the machines' initial design phase to provide high productivity. With over 3000 machines already working for varied applications, L&T's machines have gained the users' trust.

What are the advanced articulation systems in your compactors to optimise traction in undulated terrains, allowing drums to stay in better contact with the ground?

The articulation system has been designed in-house by L&T and has proven its performance in over 3000 machines. The system developed by L&T avoids complicated mechanisms and achieves the desired result using hydraulic cylinders. The entire drum surface is in contact with the ground throughout the compacting phase.

How has cab visibility, controls, and operator comfort improved?

L&T Compactors are fitted with anti-vibration pads that prevent drum vibrations from reaching the operator's cabin. In addition, all controls are within the operator's reach. All refill points can be reached from the ground. The operator's seat on the L&T Tandem Compactor, L&T 990 HF-i, can be rotated for a better view. Both the drum surfaces on the L&T 990 HF-i tandem compactor are visible from the operator's seat. The machine has been designed keeping in mind ease of operation. ■

PROVEN
PERFORMERS 
Sturdy Machines for
Road Construction

L&T 1190
Soil Compactor

CEV-IV
compliant



Operating Weight : 11,000 kg | Frequency : 34 / 31 Hz | Gross Power : 100 HP @ 2200 rpm

Presenting Perfect Partners! An exclusive range of Road Construction Equipment that are reliable, durable and gives you more value. Highly suitable for highways, expressways and road projects. Manufactured to perfection and to provide the customers with superb productivity and unmatched benefits, these machines incorporate world-class features and are backed by nation-wide network of L&T CMB Dealers who provide after-sales service and genuine parts.

**RUGGED
RELIABLE
UNBEATABLE**

MADE IN **india** MADE WITH **PRIDE**

Conditions Apply

L&T Construction & Mining Machinery

Larsen & Toubro Limited

Lakshminarayan Complex, First Floor

10/1, Palace Road, Bengaluru - 560 052

Tel : 080 4040 1700

E-mail: CMB@larsentoubro.com www.lntcmb.com Equip Care : **1800 833 9990**



Visit our website
www.lntcmb.com

For a Smooth Ride

- The L&T 2490 HD Pneumatic Tyred Roller is a truly indigenous product designed in-house in its entirety. It features eight tyres, four each in the front and rear to ensure maximum area coverage at an optimal cost



While many processes are involved in road making, they attract attention from curious onlookers when they see a synchronised operation of tippers delivering hot bitumen on sensor pavers as it lays the essential top layer, followed by Tandem compactors and, finally, Pneumatic Tyred Rollers (PTRs) kneading the top surface to provide an impermeable layer while giving you the look of a pool table finish that we all appreciate and is a treat for the eyes. It adds considerably to driving comfort.

Simply put, PTRs are used for finishing work in road construction to deliver high-quality surfaces, and a lot of engineering goes into making these machines that make long drives pleasurable. L&T ventured into PTRs in 2017 when it rolled out the L&T 2490 HD Pneumatic Tyred Roller. It is a truly indigenous product designed in-house in its entirety.

In fact, the design engineers were able to overcome a lot of challenges during the design and validation phase of the machine. Hydraulic components, including the Suspension Cylinders and Travel Motors, were developed by the L&T Hydraulics Plant specifically for this machine. Indigenous content in the machine is remarkably high, as the design stage focused on using the existing vendor base.

This machine is powered by a 100 hp, water-cooled, turbocharged, inter-cooled Mahindra Engine, model-- VNEF 100. The 24-tonne maximum operating weight of the

machine ensures a max load of 3 tonnes per tyre. The machine is designed as a 4 X 4 combination, i.e., four front tyres and four rear tyres. It ensures maximum area coverage at an optimal cost.

A state-of-the-art hydraulic system has been used in the machine with an emphasis on using the maximum possible hydraulic components manufactured in-house. The machine has a proven water sprinkling system. L&T 2490HD operates by kneading the surface with smooth tyres. The machine features a 3.5-cubic meter capacity ballast chamber that can be filled with metal scrap, steel plates or concrete debris to add to the machine's weight.

The machine reduces pinhole count on road surfaces by almost 50 per cent, thus preventing water penetration and improving the life of the road and lowering maintenance costs

This road-making equipment ensures that the pinhole count on the surface reduces by around 50 per cent. Water penetration into road surfaces is prevented due to the reduction in the pinhole count, thus improving the overall life of the road and lowering maintenance costs.

Over 55 machines have been supplied in the market, and customers are satisfied with the machine's performance. It features an operating seat which can be swivelled to improve the operator's view. All the service refill points are easily assessable on the machine. Easy access to all filters was planned right at the design stage. L&T Digi Eye, an optional feature on the machine, enables remote monitoring of the machine by tracking vital machine health parameters, fuel levels and location. ■

Women Make Panels at LTRPM

- Customers have appreciated the quality of the electrical panels made by an all-women team of technicians at L&T Rubber Processing Machinery Business,



L&T Rubber Processing Machinery (LTRPM), part of the Machinery and Industrial Products Division of L&T, as part of its commitment to empowering women and improving gender diversity, has set up an all-women electrical panel shop in Kanchipuram for building and assembling electrical control panels for its products. Eighteen female technicians have been trained and deployed to manage the panel shop.

The journey started in June 2019. Mr K. Jagadeesan, a senior electrical engineer with rich experience in inspecting and testing electrical control panels, was offered the responsibility of mentoring and developing skillsets for the all-women team. An area on the shopfloor was identified. Initially, a group of eight women ITI – Electricians were recruited. The objective was to create an environment of equality that would encourage women employees on the shop floor. The process started with structured training on assembling electrical control panels. They began by making six panels a month.

They quickly learned how to read drawings, interpret technical specifications and assemble panels. Under the program, women technicians were trained to handle critical components and understand the BOM. They were also given hands-on training in the panel-building processes making the team competent enough to deliver the desired output.

The shopfloor layout was also designed to store all materials

with proper identification tags for quick withdrawals and backtracking records. All these women technicians quickly learnt 5S practices and implemented the concept in the Panel Shop.

In 2020-21, ten more Government Apprentice Trainees were inducted, increasing the team size to 18. Since inception, they have made 500 panels till Sep'22, with a monthly average of 10 to 12 panels.

In fact, after the deployment of women technicians, the quality and deliveries of the panels have improved significantly. These girls have learnt to handle lightweight mechanical assemblies and non-structural items professionally.

Post-deployment of women technicians, the quality and deliveries of panels have improved significantly

The company takes all necessary safety measures like CCTV surveillance and dedicated sanitary facilities and ensures a safe work environment.

Considering the business opportunity, LTRPM plans to increase the team size, with a vision of enhancing the output to 15 panels per month.

Gender equality has become a crucial component of ESG (Environmental, Social and Governance) initiatives; LTRPM is focusing on gender equality on the shop floor to empower the current and the next generation of women to pursue their dreams. ■

DECO Welcomes Women's Crew at BCCL, Rajapur

- L&T is a firm believer and an advocate of Women's empowerment. We follow a work culture of comprehensive inclusiveness.



At Bharat Coking Coal's Rajapur Mines, DECO (Dhansar Engineering Company Pvt. Ltd.) has recently inducted ten Komatsu HD785 Dump Trucks for executing a contract for overburden removal. L&T deputed its newly trained all-women crew from the L&T Product Support Department at Durgapur to the site in Dhanbad for assembling, commissioning and maintaining these mining trucks.

DECO will provide a safe working environment to the women's crew and enable them to get first-hand experience in handling HEMMs (Heavy Earthmoving Machinery).

To provide a fillip to the activity and motivate the women's crew, L&T hosted a key handing over event on 21st April 2022 wherein the DECO Directors Mr Manoj Agarwalla and Mr Harsh Agarwalla along with L&T officials,

Mr Parthasarathi Datta, Mr Rajat Chakraborty and Mr Souvik Ray participated at the site with other stakeholders.

L&T is a firm believer and an advocate of Women's empowerment. We follow a work culture of comprehensive inclusiveness. In fact, we are one of the pioneers in offering a platform for women to break traditional barriers in the construction and mining sector.

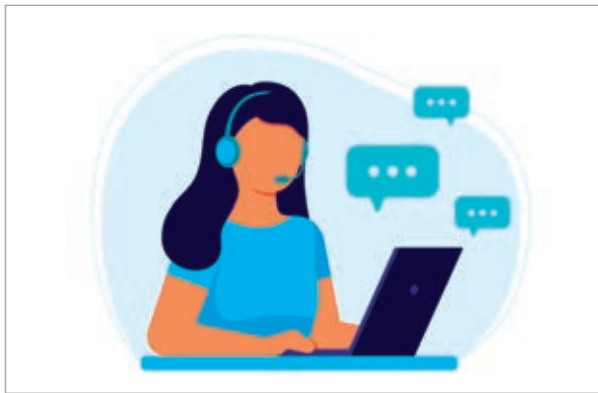
An all-women crew has been effortlessly maintaining mining dumpers at Tata Steel's Noamundi Mines in Jharkhand. Another group of women recruited from ITIs are now adept at repairing these complex machines at L&T's Durgapur Service Centre

An all-women crew has been effortlessly maintaining mining dumpers at Tata Steel's Noamundi Mines in Jharkhand. Another group of women recruited from ITIs are now adept at repairing these complex machines at L&T's

Durgapur Service Centre. No wonder this Service Centre, hitherto male-dominated, now reverberates with women's laughter, and so will the DECO's project site! ■

Call 1800 833 9990 for Equip-Care

- L&T's Equip-Care programme, a pro-active after-sales support program, seamlessly integrates smart machines, Customers' requirements, and a trained after-sales team support team across the country



We believe, 'In Service Lies Success', and as such, at L&T Construction & Mining Machinery (L&T CMB), we aim to reach out to customers in 3-4 hours for after-sales. In fact, in our long history of operations in the Construction and Mining Machinery industry, superior aftersales service has been the key differentiator for customers.

L&T CMB has set up a large network of 30 dealers, 131 sub-dealer outlets, and 27 territory offices of L&T's Domestic Marketing Network. This means that most sites are within a 3-hour travelling distance, while the response time could be 24 hours in the hilly terrains or inhospitable conditions. Our Central warehouse at Nagpur is strategically located to reach major centres within 24-48 hours.

It is easier said than done! Especially with a diverse portfolio of machines and a population on the field that runs into a few tens of thousands, with many machines operating in interiors. It is a job that requires managing a network of service engineers from L&T and dealers, data and spares seamlessly so that Customers get the best of the services within a fixed time. The aim is to make sure uptime for every machine is maximised.

Our culture of innovation over the decades and current association with Komatsu and Scania has helped our team build their capability towards world-class technology and services that can be customised for every goal. At L&T, the rudimentary subjective philosophy of instinct and pulse-based service has long transcended into modern diagnostics-driven predictive countermeasures for each machine to ensure that the proper attention is stimulated

Our culture of innovation over the decades and current association with Komatsu and Scania has helped our team build their capability towards world-class technology and services

when it is due. This is known as "The Science of Service".

All L&T Service Centres are equipped with modern tools and machinery to repair or remanufacture components to global standards prescribed by our principals. We rejuvenate engines, transmissions, hydraulic components, and structures with a new lease of life in our scientifically laid-out workshops with the utmost efficiency of men, machines and resources in a perfectly safe environment. We also test before our customers trust it. Our test benches simulate the gruelling operational parameters onboard a real machine to ensure that it works as good as new-a real value-for-money proposition for our customers.

L&T's Equip-Care programme, a pro-active after-sales support program, seamlessly integrates smart machines, Customers' requirements, and a trained after-sales support team across the country to provide unmatched support experience to our customers. Equip-Care continuously draws information from Komtrax on the machine to plan scheduled services and necessary interventions in case of any caution or abnormality and alerts in the shortest possible time.

Equip-Care, a toll-free facility, allows customers to record service requirements on a 24x7 basis. The facility provides a deadline within which the service is rendered. They can also register their feedback, based on which we constantly improve restoration time with technology as an enabler. We are continually improving our service delivery and creating more value in after-sales.

This Science of Service is epitomised by methodical and comprehensive PM Clinic services, KUC-Komatsu Undercarriage Inspection, and Oil and Wear Analysis to enhance machine life with the latest information and communication technology and data-driven analytics for the end users. Automation and digitalisation have brought innovative sustainability with remote technologies to benefit our customers with predictive course correction in a logical manner. After all, the cost and consequence of a proactive component rehabilitation beforehand are much lower than after it encounters a failure. A testimony of our endeavour is the effective enhancement of mining equipment life to over 60,000 hours and beyond. ■

DETs, JETs, on your mark...go!

- The JETs are high academic performers, hand-picked from polytechnics across the country. They are trained extensively at our Kanchipuram campus and are converted into professionals

When mammoth mining machines such as PC1250/PC2000 Hydraulic Excavators, HD785/HD465 Dump Trucks, WA900/WA800 Wheel Loaders and D275/D155 Dozers are assembled at customer sites by the L&T team ahead of schedule, despite limitations of harsh weather and extremely interior locations, the boys come in for high appreciation for deftly handling site activity with perfect coordination of the teams, both from the principal Komatsu as well the customer.

Behind this success of assembling these mammoth machines are the demonstrative skills of L&T diploma engineers who form the critical asset in servicing and upkeep of the machines. "Technical service & support is a crucial element for product support in earthmoving equipment and a key differentiator in the industry. L&T CMB service stands out among competitors with the best service support mechanism", says Mr K. A. Sravan Kumar, Head-Product Support.

DETs (Diploma Engineer Trainees), later termed JETs (Junior Engineer Trainees), form the bulk of the service support team in dealing with mining customers and supporting our dealer engineers for construction equipment. Since 1990, when centralised DET training started at Powai, L&T has trained 645 DETs/JETs.

Says Mr Naresh Thakur, Head-Central Training Centre, "The JETs are high academic performers and hand-picked from polytechnics across the country. We give them extensive training at our Kanchipuram campus to convert them into professionals with technical expertise in machine upkeep, testing, adjustment, troubleshooting and repair skills."

All JETs undergo a 6-month initiation training at CTC and a structured schedule that equips them with in-depth knowledge of machine operation and maintenance parameters. Theory and practical learning in CTC are followed by a 3-month site orientation where they shadow expert engineers to comprehend complex field issues.

During the training, DETs also develop soft skills and absorb the attitude and behaviour that make them customer friendly. Their assertive communication skills with empathy and a strong product focus also make them advisors to



customers.

When it comes to customer engagement, the JETs represent L&T service and build the relationship with a deep commitment that often surpasses the time barriers and mandatory schedules only with the sole purpose of providing increased equipment uptime. The growing number of fleet owners and repeat sales reflect the quality of service they render to customers.

"It is the effective product support that separates us from the rest in today's environment. They handle key account customers and resolve issues to ensure customer delight. Most of the Full Maintenance Contract sites are handled by engineers who started their careers as DET/ JET", reveals Mr Thakur with a sense of pride.

To ensure that service engineers always remain skill-sharp, L&T CMB conducts Advance Technic Contest for them as well as for the Dealer engineers.

To update the large pool of service engineers and connect with them, L&T CMB's dedicated online LMS portal hosts technical inputs periodically.

For the DETs and JETs, learning is a continuous process, and L&T enables them with a rewarding career that sees them occupy responsible positions in the Product Support Department. Being close to customers and addressing their issues is of utmost concern to DETs and JETs. ■

All JETs undergo a 6-month initiation training at CTC and a structured schedule that equips them with in-depth knowledge of machine operation and maintenance parameters.

Manthan 2022 for Better Roads

- ICEMA put up a common pavilion in the outdoor area for its members with a display and demonstration of their select products used in different stages of road construction



Coinciding with Azadi Ka Amrit Mahotsav, the Ministry of Road Transport and Highways, Government of India, organised a three-day national event, 'Manthan 2022,' in Bangalore from 7th to 9th September 2022. With the National Highways Authority of India as a partner, the event comprised a national conference and a product exhibition with a focus on using innovative materials, new methodologies for sustainable roads and accelerating road construction across the nation.

The exhibition conducted by FICCI saw ICEMA (Indian Construction Equipment Manufacturers Association) put up a common pavilion in the outdoor area for the members with a display and demonstration of their select products used for road construction. Komatsu and L&T had a display of the Komatsu PC205 Hydraulic Excavator, L&T 9020sx Wheel Loader, L&T 1190 Soil Compactor and L&T 491 Mini Compactor.

Prominent visitors to the exhibition included Mr Nitin

Gadkari, Hon'ble Union Minister, along with Gen V. K. Singh, Minister of State for Road Transport and Highways, Govt of India and Ms Alka Upadhyay, Chairperson, NHAI. The indoor pavilion had stalls related to green-powered vehicles and innovative technologies. A drone show reflecting the achievements of MoRTH was a big attraction.

Komatsu and L&T had a display of the Komatsu PC205 Hydraulic Excavator, L&T 9020sx Wheel Loader, L&T 1190 Soil Compactor and L&T 491 Mini Compactor.

The national-level conference had multiple sessions dealing with smart, sustainable road infrastructure, mobility and logistics ecosystem. Expert sessions were held on using recycled materials, precast technology, sustainability-related challenges, expanding the national highway network, road safety initiatives, fleet modernisation and vehicle

scrapping policy. Ministers and bureaucrats of public works, industry and transport departments from various states participated in the conference and interacted with MoRTH officials and subject experts. ■

1. Excavators are classified on the basis of _____

A: Operating weight

B: Horsepower

C: Bucket size

2. How many working modes are there in PC210-10M0?

A: 3

B: 6

C: 10

3. _____ has been specially developed for marble applications

A: PC205

B: PC130

C: PC350

4. Which Komatsu Excavator model was launched during EXCON 2021?

A: PC210-10M0

B: PC300-8M0

C: PC205-10M0

5. What is the change interval of the hydraulic oil filter used on PC210-10M0?

A: Every 1000 Hours

B: Every 1500 Hours

C: Every 2500 Hours

6. _____ is popular in the brick industry in East

A: PC450

B: PC71

C: PC350

7. Komatsu Machine Tracking and monitoring system is named _____

A: Digi Eye

B: Komtrax

C: Eagle Tech

8. Which Excavator model achieved the fastest 1000-machine sale?

A: PC200

B: PC350

C: PC210-10M0

9. A new machine in the 50-ton class was recently launched. it is the _____

A: PC350

B: PC500

C: PC130

10. Who should perform walk around inspection before starting the machine?

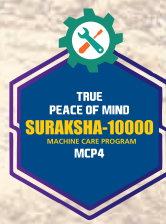
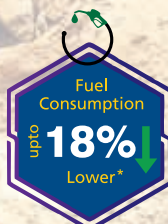
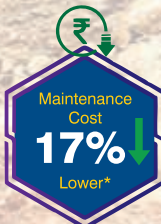
A: Machine Owner

B: Operator

C: Service Engineer

Answers:

Q 1: A | Q 2: C | Q 3: C | Q 4: C | Q 5: C | Q 6: B | Q 7: B | Q 8: C | Q 9: B | Q 10: B



Engine Power : 148HP @ 2000 rpm | Operating Weight : 20,300 - 20,900 kg | Bucket Capacity : 0.85-1 m³

Larsen & Toubro introduces the latest in 20-ton series, Komatsu PC205-10M0 Hydraulic Excavator, the 'Earth Master' built specially for the Infrastructure & Construction Industry. A product of Komatsu's advanced technology, PC205-10M0 gives you unmatched fuel efficiency and delivers high performance with low initial cost and low maintenance cost.

PC205-10M0 is fitted with the latest Komatsu engine, has faster cycle times for higher productivity and has higher digging forces that makes your job efficient and easy. With KOMTRAX, the patented remote

machine performance tracking system from Komatsu, you can manage your fleet conveniently anytime, anywhere. It also comes with the unmatched MCP4 (Machine Care Program) of 10,000 Hrs / 4 Years Extended Power Train Warranty.

All Komatsu machines are backed by L&T's nationwide network of service centres and dealer outlets to ensure effective after-sales service and parts support for higher availability and machine uptime.

A Made-in-India machine, built tough for consistent performance in earthwork excavation across urban India.

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