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Komatsu has been the industry leader in the usage of ICT tools on excavators.

What are the demand outlook and the growth drivers for excavators of different capacities for general construction, roads and highways and mining sector?

With the Government of India's focus on infra development, road and general construction have become a key demand driver for excavators. The rate of road construction has been significantly stepped up from 27-28km/day to 37km/day during FY20-21. With over UDS 37.3 Bn budgetary allocation on infra development for FY21-22, we expect the excavator demand to grow by 15% to 20% over FY20-21. National Infrastructure Pipeline (NIP) is a large opportunity which will help sustain the demand for excavators over the next 5 to 10 year period.

Roads and general construction primarily deploy excavators of 7 ton-35 ton capacity, with 20 ton being the largest segment. Komatsu has an established and a successful product in each segment viz., PC71, PC130, PC210, PC300 & PC350. All these machines have a proven track of over 20,000 hrs each, and are considered the best on 'Quality, Reliability & Durability'.

In the mining sector, there are two segments of users – contractors and mine owners. While contractors prefer

to use 45ton-50ton class excavators, such as Komatsu PC450, mine owners-cum-developers prefer to use larger size excavators in 80 to 200 ton range, such as Komatsu PC850, PC1250, PC2000. L&T recently supplied and commissioned 300-ton class Komatsu PC3000 Electrically Operated Shovel to one of the large coal mines in Central India. With a growing requirement of coal, metal ores & limestone, mineral extraction volumes are being stepped up. Accordingly, the size of excavator is also increasing in line with international standards.

Advancements in attachment coupling technology combined with new products mean materials processing can increasingly take place at the end of an excavator arm. To what extent have you been able to leverage the advantages of disruptive technologies in the range of excavators?

Advancements in attachments, coupling technologies have made excavators most versatile, suitable for undertaking a variety of jobs. Some of the popular attachments on excavators include rock breakers, quick couplers, clamshell buckets, orange peel grapple, slope compactors, bucket crushers, super long front, tunnel attachments, screening buckets, pile drivers, electromagnets, scrap shear, concrete cutters, rotary cutters, vibratory rippers, trench cutters, trimmers etc., On Komatsu excavators, we offer all these attachments, which have helped us address requirements of a wide section of customers and applications.

We offer a range of Komatsu rock breakers & quick couplers, rammer range of rock breakers, boom breakers & cutting solutions and Movax pile drivers. We have developed attachments such as slope compactors, crusher buckets, clamshell buckets, rock splitters indigenously using in-house design and manufacturing capabilities.



How has data analytics and sensor technologies impacted your cab design for excavators?

Komatsu has been the industry leader in the usage of ICT tools on excavators and other construction and mining equipment. Komatsu's telematics system KOMTRAX (Komatsu Machine Tracking System) collects machine data from sensors and controllers and transmits data to the Komatsu server and caution and eco-guidance inputs to the machine monitor for the operator to take corrective action.

Except for the user friendly TFT monitor, there is no visible exterior change in the machine cabin. The GPS antennae and the Komtrax controller are safely placed within the cab frame protected from wateringress during rains and even machine cleaning with water jet.

Sensors are linked to the controllers and monitor panel through CAN network and provide caution signal to the operator. Operators are informed in case of excessive idling, relief operations, travel speed guidance, economy mode selection, apart from the conventional basic caution items like coolant temperature etc., and error display for machine faults. The eco-guidance keeps displaying the fuel consumption zone and cautions the operator if it exceeds the set consumption. This allows the operator to change operating style, position, or material preparation etc. Using the monitor panel is as easy as operating a basic mobile phone. The control levers and operating pattern have not changed, and operators take very little time to understand and begin using the advance features on these machines.

The Komtrax report when downloaded from the internet captures detailed operational behavior and displays parameters over a period under study. Customers with more than one machine can have his entire fleet details in one go and monitor maintenance and working parameters with ease.

Give us a brief on the advances made in the engine used in excavators?

Ecology and economy are the two key drivers of engine technology today. As emission norms are becoming stricter with BS-III and BS-IV regulations, engine exhaust gas

constituent management is evolving at a fast pace. Electronically controlled high pressure injection common rail fuel system has replaced all mechanical inline fuel systems. Electronic control provides flexibility of pre and post injection. Komatsu engine design has high top ring on their pistons for reducing dead space and better soot control. Precise injection angle with piston crown designs together provides excellent fuel mixing in the combustion chamber. Komatsu PC210-10M0 excavators, has a Komatsu's 165 HP engine, meeting EPA Tier 3 norms with air to air after cooled, turbocharged air intake system and HPCR. In larger engines (715 HP), however, EGR (exhaust gas circulation) is used.

What kinds of after-sales support initiatives have been embraced by you to maintain customer satisfaction and brand value?

L&T is celebrating its 75th year in the Construction & Mining Equipment Business (CMB). In fact, CMB is one of the oldest businesses of L&T. Throughout our journey of 75 years, our credo has been 'In service lies success'. Hence, L&T created world-class nationwide network of service centres, dealers and site support team which offer a comprehensive after-sales support solution to the customers.

With Komtrax, all Komatsu excavators are connected and enable tracking of performance and remote monitoring. We have launched a digitally-enabled after sales support program named 'Equip-Care' which seamlessly integrates machine-initiated service requirements such as scheduled services based on SMR, caution / error code-based service requests and service requests from customers. Equip-Care

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the machine, and capturing customer experience. With a well-trained team of service engineers, nationwide network of dealers supported by L&T's workshops as well as Equip-Care, we have served over 90% customers, meeting / exceeding their expectations.

What do you think are the challenges, risk factors and possible new avenues in the excavator segment?

India is a rapidly developing country with a large young population. To meet the growth and expectations of this aspiring population, infrastructure development is the key. Excavators are one of the most versatile construction equipment and we expect the demand for this equipment to continue for a long period.

However, demand for improved efficiencies and the continuing need to make them versatile are the key challenges that the industry is currently working on. With the world moving towards electrical vehicles, developments on excavators in this direction will be the next technology frontier. **ET**

program can be accessed by customers through dedicated App / toll free number (1800 833 9990). Unlike many other customer support systems, Equip-Care is designed to leverage digitalisation with a strong human interface -starting with understanding the service requirement, deputing the engineer, addressing the issues on

backbone of equipment industry

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