

AUTOMATION TO TRIGGER GROWTH IN MACHINE TOOLS INDUSTRY

*The demand for metal cutting tools and precision tools is anticipated to surge in the near future. The region of APAC seems to have the most potential and promising markets for the success of this industry, reports **Huned Contractor***

The global machine tool industry is expected to cross USD 120 billion by 2020, reports research firm Technavio. The sector comprises diverse elements including metal cutting tools. The respective market is also anticipated to grow in the coming years owing to the rising demand of vehicles across the world. The global metal cutting tools market is expected to grow at a CAGR of around 9% by 2021, the report states, the core reasons behind the increase attributed to the rise in demand of automobiles, two-wheelers and the development of lightweight vehicles. As more and more lightweight vehicles are produced, the demand for unique and innovative welding components will also enhance, thus increasing the demand for machine cutting tools.

The metal cutting tools segment comprises lathes, drilling machines, milling machines, boring machines, grinding machines, machining centers, etc. In terms of geography, the APAC region is expected to hold the foremost position for the metal cutting tools industry by 2021, according to expert analysis. The other economic zones of Americas and EMEA (Europe, Middle East, and Africa) are also expected to show a decent growth in the forecast period. Market research Company, Future Market Insights, predicts the precision tool market to grow at a steady pace until 2026. Precision tools play a significant role to improve or enhance the accuracy and precision while machining products.

They are automated with the assistance of CNC functions (computer numerical control) which enable the machining processes to be carried out smoothly. The segment caters to a range of sectors including automotive, healthcare, consumer goods and defence. Consisting of large and small companies, some of the major players of this industry are DMG Mori, Yamazaki Mazak, Fanuc, Doosan Infracore, GF Machining Solutions, and many more. On a global scale, the US and Europe are the hotspots for the precision machine tool market. Experts have also predicted the Asia Pacific region to be a growing market which will lead to significant growth of the industry.

The Indian machine tool industry is globally ranked 12th in production and 8th in consumption as per the Gardner Research Survey 2017. The market size of machine tools in India for 2016–17 was estimated to be around Rs 11,600 crore of which the domestic production accounts for about 47 % of the total consumption. The industry registered an impressive growth rate of 23% during 2016–17. As per industry experts, the machine tools segment will register growth of 25-30% in th financial year 2017-18. “We are expecting the momentum to continue for a couple of more years provided the government policies are supportive and maintained. For the next couple of years, the Indian market is very bullish as far as the metal cutting industry is concerned,” an industry spokesperson said.

CNC is the latest trend in the sector and now it will be based more on sensors. Automation is another trend that the machine tool sector is currently witnessing and at present the real cutting time is about 50 – 60% for most of the machine tools. This is expected to be the trend for the

next couple of years. Meanwhile, machine tool exports from India reached about Rs 360 crore during FY17. Indian machines are price-competitive in their range, making them suitable for exports. Indian companies have grown rapidly over the last decade and have marked their presence across all the broad product categories of machine tools. Many of them are also exporting to countries such as Germany, Turkey, China, Middle East, Russia, South Korea, etc.

According to Inderadev Babu, Managing Director, UCAM (P) Ltd., as quoted in a trade magazine article, “The industry is in a heightened state of anticipation for the demand to go up steeply. The mood is positive and the mainstay is the automotive industry.” A little further into the future, the Indian machine tools industry, though highly fragmented, is projected to grow at 5.5% annually through 2019, driven particularly by expanding demand in China and other developing countries. With the presence of several small, medium and large suppliers, including international and regional players, the companies engaged in machine tools manufacture compete in product differentiation, service portfolio and pricing.

“Process automation, additive manufacturing and the rise of electric vehicles are the three core trends that are changing the dimensions of the machine tool industry,” notes Cyril Pereira, Managing Director, Reed Triune Exhibitions. Stating that the industry is growing at an exponential rate and is presently estimated at around Rs 6,000 crore, he said the manufacturers will need to develop capabilities to cater to the demand and investments in this area could yield long-term benefits. In a chat with Business Line, he said that the industry has advanced significantly in hardware and software applications. The future includes automation of processes in the manufacturing and engineering sectors.

There are various trends impacting the machine tool industry, one of them being the implementation of Industry 4.0. The machine tools industry has evolved with the development of both hardware technology and software applications. This has resulted in machines becoming faster, intelligent, and versatile. As such, the standardisation of multiple products on a single platform is possible. For instance, advanced CAM technology is being used for multi-axis, multi-spindle, and multi-turret machines. In addition to this, specific software is being increasingly used for automation of manufacturing and engineering processes. These applications provide an integrated view of operation through direct integration with product lifecycle management, manufacturing execution services, process planning, and enterprise resource planning systems.

The second most important factor driving growth in the machine tools industry is automation. This is moving towards machines being interfaced with automation systems and smart controls so that reduced manual intervention in process control using the machine tool control system and smart tooling will be the key to improving overall productivity in the most cost-efficient manner. Globally, many advanced manufacturing markets have adopted these technologies and the trend is set for the Indian machine tool industry to address the technology gap and drive innovation in this direction. In addition, the improved quality, capabilities for machining high-precision components and improved productivity will be the key factors to stay ahead of competing markets like China.

Here it is interesting to take note of what Vijay Pratap Singh, the head of motion control business in Siemens Ltd., has to say about the machine tools industry, according to his opinion published

in Business Standard. “Small and medium enterprises (SMEs) form the backbone of the Indian manufacturing industry. They contribute 38% to the nation’s GDP, 37% to its manufacturing output and 40% to its exports. Moreover, the segment is always buzzing with innovations. Companies are constantly transforming themselves and reinventing business models to stay one step ahead. As the demand for high-tech and efficient machines in the industry rises, digitalisation of the production process becomes the key to higher productivity, flexibility, and efficiency, as well as simple operability and the possibility of permanent optimization. While traditional manufacturers use various tools for milling, turning, grinding, and other applications, digitalisation is radically and sustainably changing the production environment and becoming an indispensable part of business. Very soon, it will be the new normal,” he says.

“India’s machine tools industry is expected to play a key role in accelerating this manufacturing growth as it is a strategic pillar of the manufacturing industry. The machine tools industry is pivotal to the augmentation of various discrete manufacturing segments such as automobiles, defence, railways, plastic machinery, electronics, white goods, etc. It will have a huge role to play in the government’s flagship programme ‘Make in India’. The Indian machine tool industry comprises about 25% large players and the remaining 75% is dominated by small manufacturers and manufacturing companies. Despite SMEs occupying majority share in the machine tools industry, they are currently facing multiple issues that are hindering its growth. The most critical issues for SMEs are continuous quality improvement, scope, and scale. Some of the major factors responsible for this are extensive manual interventions in processes, interrupted flow of data and lack of skilled manpower,” he adds.

Companies these days through its build-operate-optimize approach towards digitalisation in machine tools, is enabling SMEs to take the leap. The companies offer a wide range of solutions like OPC, UA, etc. through hardware and software integrations. These tools and technologies have the potential to fundamentally alter the course of SMEs growth and catapult them into the big league. “SMEs in the machine tool industry need to move towards conceptualisation and adoption of digitalisation and Industry 4.0. With this, they can enhance efficiency, reduce cost of production, minimise manufacturing defects, and shorten production time. This will help them meet international quality standards as well as strengthen their position as competent suppliers for the global market,” Singh opines.

Digitalisation will, in fact, support Indian SMEs to move one step closer to the ultimate goal of enhancing their productivity and efficiency and address their on-ground issues. “The other major challenge lies in skilling workers for using advanced machine tools. SMEs face challenges to execute their expansion plans due to the lack of skilled workers. The government’s ‘Skill India’ initiative is a great step to bridge the shortage. However, the skill gap is huge and the new-age machine tools demand major upgrades of existing skill-sets. Yes, the government is taking initiatives to develop a skilled workforce, but there is a long way to go. For India to become a global manufacturing hub, SMEs will have to adopt advanced machine tool technologies,” he concludes.
