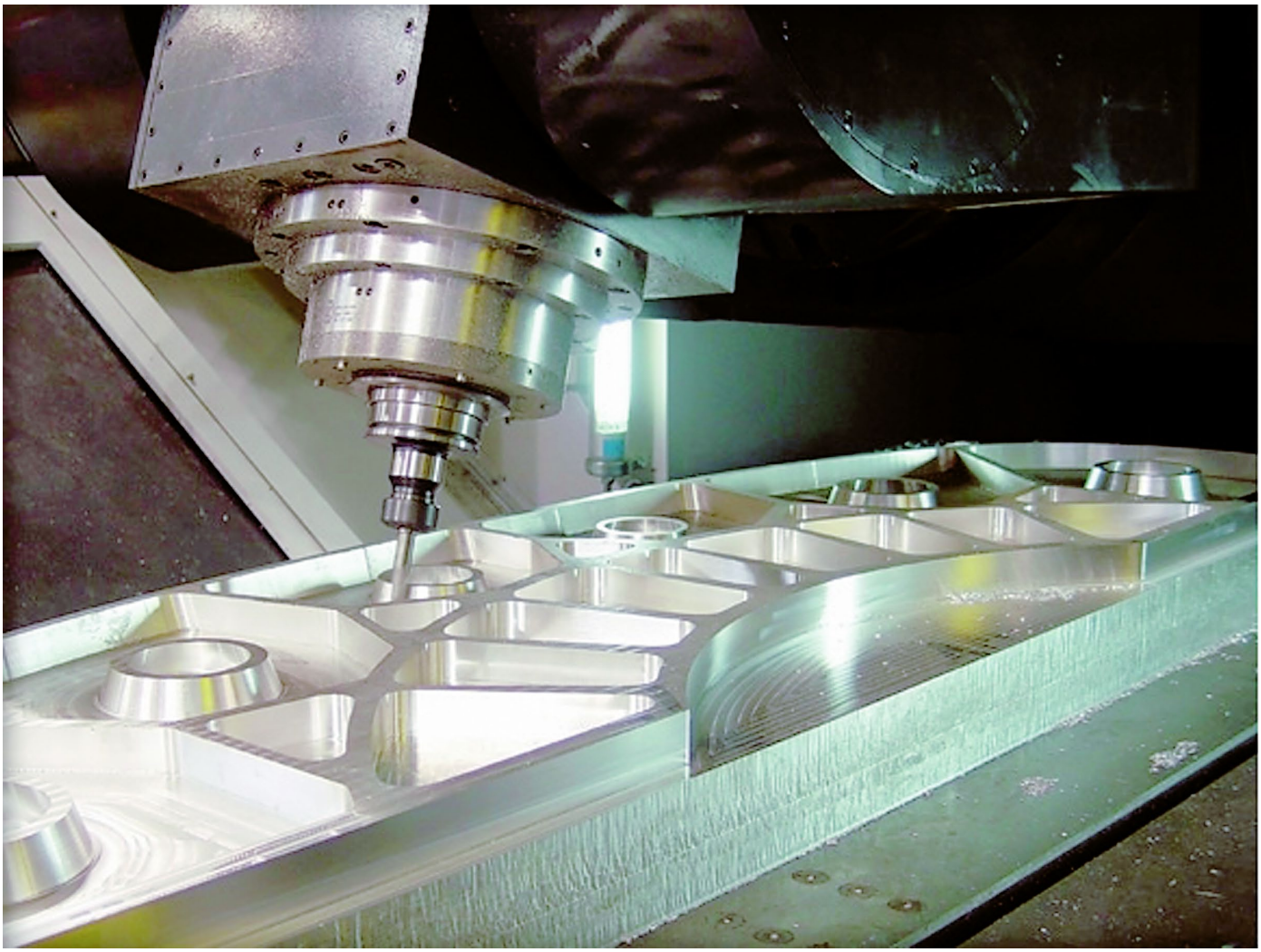
The Spark of CNC

The Machine tools industry has been a vital segment influencing the overall growth patterns of India's manufacturing industry. As the SMEs lean towards CNC to improve efficiency and productivity, it is time for the industry to show its resolve in outdoing its dependency on imports.



One of the most important segments for the growth of India's manufacturing sector is the Machine Tools industry – seen as the growth marker of the entire manufacturing industry. The progress of this segment is essential for the growth of strategic sectors such as defence, railways, energy and infrastructure. The growth of the Machine Tools segment has been one of the reasons why small and medium manufacturing enterprises are witnessing a steady growth, especially those dealing with metals, textiles, infrastructure, food processing, chemical, pharmaceuticals and power. Nearly 72% of the machine tool industry in India comprises of small and medium enterprises (SMEs), which are looking to expand their bases and overcome the obstacles in the form of competition from imported products, labour crunch, lack of R&D in the country as well as the fluctuating prices of metal and power. With the escalating global competition, India is faced with a challenge to create a pedestal for itself in the international machine tools market by producing superlative quality products that are also competitive on the price count. India currently ranks seventh in machine tools consumption, globally, but ranks 13th in production, lagging way behind China, Germany and Japan who are at the top three positions. However, the projected demand growth of 15 percent CAGR over the next five years is a clear indication that India must increase its production capacity for Machine Tools at an average CAGR of 25 percent to become a world-class manufacturing hub in the next few years. Experts feel that the industry will benefit a great deal from R&D, ironing out its issues related to manpower and also increasing the emphasis on training.

THE MOVE TOWARDS CNC

Market studies have indicated that India's Machine tools industry is witnessing a gradual transition towards CNC

machines. According to the latest market survey by Kolkata based research company, Netscribes, the Indian Machine Tools market is expected receive a boost by the increased adoption of CNC machine tools, thanks to the multiple advantages that it offers over conventional machine tools. Netscribes Inc's report titled 'Computer Numerically Controlled Machine Tools Market in India 2013', highlights how a healthy economic outlook stimulates the adoption of CNC machine tools and the growing demand for automobiles and auto components is yet another major contributor, influencing growth of the CNC machine tools market in India. The well established foundry industry, ever growing capital goods industry and the robust medical equipment market also provide major opportunities for market growth, according to the survey. M D Sreekumar, Managing Director, HMT Machine Tools Ltd., agrees that CNC has significantly impacted engineering manufacture, today. Sreekumar says, "This is evident from the replacement of conventional machines by CNC machines in many of the machine shops in our country. Most of the manufacturers of machine tools have switched over to the production of CNC machines from conventional machine tools. CNC machines constitute a major portion of machine tools manufactured today. New entrepreneurs in the field of manufacturing start with a CNC machine. Technology has enabled to produce CNC machines at affordable or less costly than conventional machine." Sreekumar feels that the auto sector has greatly benefited with high productivity, less labour skill, and very less or no rejection brought by CNC in manufacturing. "India is planning to position as an automobile hub of the world and is a preferred destination for high accuracy jobs to the western world which is made possible by only CNC machines," he says.

Experts say that many small and mid-sized enterprises operational in the Indian machine tools industry happen to be first time entrepreneurs. The machine tools industry has been a platform for many enterprises to find a footing at a global level. But now, CNC controlled machine tools is expected to witness significant growth in application owing to extensive usage in manufacturing and strategic sectors, according to the Netscribes research. This Market is characterized by a high dependency on imports for critical CNC machine tool components. Following a stagnation and decline in the growth rate of the machine tools industry in developed nations, focus is being shifted to low cost and high skill developing nations like India, where the growing adoption of CNC machine tools in different manufacturing segments will drive market growth. Harsh Gangrade, Director at Concept Automation, seconds that CNC has completely changed the way manufacturing processes occurred in India. "Flexible manufacturing, management information system and reliable manufacturing is made possible only by use of sophisticated CNC. If you see modern manufacturing setup, where manufacturing lines are continuously working without human presence, this all is made possible only by CNC in machine tools. Also the quality of cutting is largely improved due to servo control technology with continuous feedback from motors."

IMPORTS OUTWEIGH HOME MANUFACTURING

However, despite growth in exports, imports have substantially outweighed exports in CNC machines from India. The main challenges facing the Indian CNC machine tools industry, according to the Netscribes survey, is its dependency on imports for critical CNC components as well as the high cost of CNC machines. Debosree Banerjee, Research Associate, Netscribes (India) Pvt. Ltd., says, "The CNC machine tools industry in India can be termed as import dependent. Countries such as Japan, Taiwan and Korea are much ahead in terms of technology development as compared to India." However, experts feel that although the users have progressed to keep abreast with the advancements in the CNC machine tools technology, it is the manufacturers who are lagging behind. Gangrade says, "India is keeping its pace with global manufacturing technology. Whereas end users are using latest machines but our machine tool builders are still in infancy stage and offering low end products. Almost 100% advance or high technology machines like gear cutting and cam grinding are imported. Also, I have seen some of the global auto giants, who were using Indian machines in their first phase of plant setup, are now moving towards imported machines. This is a sorry state for the machine tool industry."

Sreekumar says, “On a five point scale we have crossed point three. We are catching up very fast with the developed world in the field of manufacturing. But, five-axis machining is one area where India has to catch up. At a recent technology show, Indian machine tool builders successfully manufactured and exhibited such machines. The other area, where India needs to work is hard part machining and precision machining.”

Several studies have indicated that many CNC machine tool manufacturers are located in Karnataka and Maharashtra with Bangalore as a base for most of the CNC machine tool companies. Global players operate in India through marketing agents, technical centres, service centres or assembly centres. In fact, experts point out to the fact that India’s machine tool SMEs have shown enough potential to attract local manufacturers as well as the global companies, especially from the European and Asian markets. Gangrade says, “At present is India and China are the hotspots of global manufacturing, so all the CNC makers and machine builders are present too. But there are very few manufacturing bases set up in India.” Reports indicate that India has over 250 CNC machine manufacturers, with growing numbers, every year.

This is because of India’s openness to adapt to the changing technology trends. Banerjee says, “The manufacturing industry has a positive outlook towards the adoption of CNC machine tools. CNC tools adoption is the future of the manufacturing industry in India.” Gangrade seconds Banerjee saying, “The Industrial sector in India is very knowledgeable and adapts itself to latest technology very fast. We are seeing global auto giants setting up their factories with latest technology of CNC.”

According to Sreekumar, the Indian manufacturing industry has been orienting itself to higher technology at a very high rate. He says, “As per the latest statistics we are importing 5000 Cr of machines when the country is producing 2000CR. More than 70 % of the imported machines are high tech and high value added machines. The trend clearly shows a positive shift toward technology and new machining.” According to Netscribes, India’s growing economy will support the sustainable development of CNC machines market.

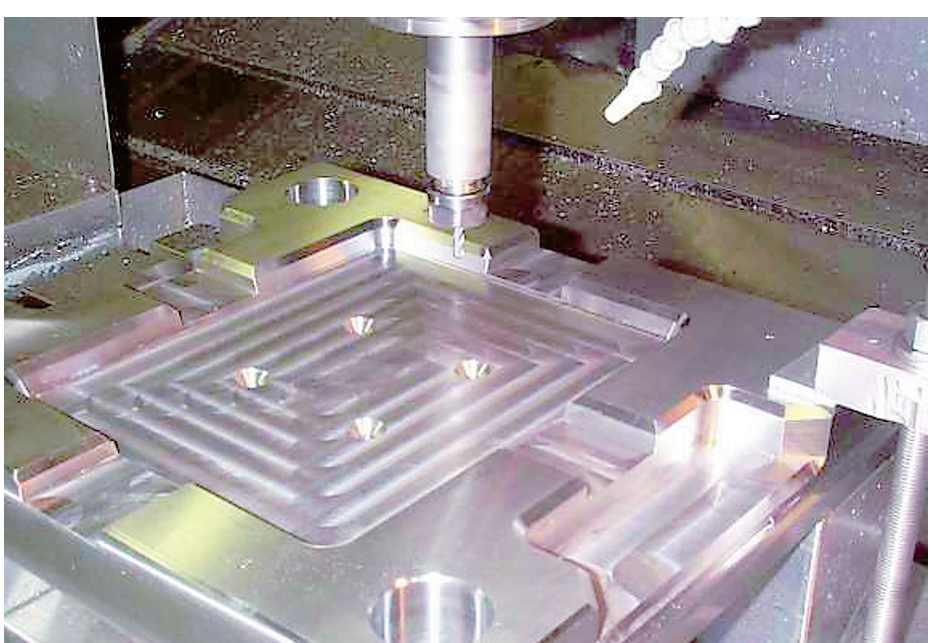
WHERE ARE WE HEADED?

Gangrade feels that the emerging trends In CNC machining in India would witness an integration of various operations in single machine. “Whereas earlier people were using four machines for manufacturing of a component but now machine tool builders are offering machine which can combine all-side machining in a single machine. Also people are moving towards unmanned machining cells, using robot or loaders.” Apart from the integrated manufacturing, five-axis machining and job shop concept too are gaining much popularity, according to Sreekumar. He says, “These new trends will redefine how components are being manufactured in the future. Concept of CELL / line technology is getting replaced by one machine concept where all operations like turning, drilling, milling boring, grinding etc will be done in one machine. This will satisfy the highest demand on quality and finish required for advance machining operations. In the software front more and more user friendly user screens support operate to machine components and trouble shoot errors. Menu driven programs make even first user or conventional machine operator to quickly adapt to CNC machines.”

While the shift towards CNC machine tools is clearly a positive sign, experts also have a word of caution for those who are looking to take the plunge. Gangrade says, “Selecting a CNC System and software should be based on requirement of your end product. There is no fun is selecting a high end costly CNC system for a normal job shop product. CNC systems are having special features for Die Mould machines, Gear Hobbing machines or grinding machines. Special care should be taken while selecting a milling machine for Die Mould product, where you require high speed processing of CNC System. Also care should be taken for the future requirement of the company. If you are going to integrate management information system and networking of machine, then you must select CNC where these features are available.”

It is known that SMEs are the lifeline of the Indian machine tool industry, thus making India the nucleus of the machine tool industry in Asia. The industry mainly deals

in the manufacturing of complete range of metal-cutting and metal-forming machine tools. There are various CNC machines offered by domestic manufacturers – special purpose machines, robotics, handling systems and TPM-friendly machines. Many SMEs are keen on upgrading their production systems with the constantly innovating technology to match the steps of the ever-changing global market. Gangrade says that SMEs have certainly realized that the benefits of using CNC are immense. "High Accuracy, more flexibility and less maintenance – if you combine these three benefits, it automatically stands way ahead than conventional cutting process. They have acknowledged that fact."



Sreekumar feels that the fact that machine tool builders in India have "matured to offer good quality and reliable CNC machines at affordable prices", is an indication enough that small scale have understood that they can greatly benefit from CNC machines and are placing demands for the same. Sreekumar says, "CNC machines have very high productivity compared to conventional machines, which enables manufacturers to respond to market demand of very less delivery time and JIT followed by OEM's. The skilled labour is replaced with unskilled labour, which needs to be trained only for loading and unloading of components in machine. Labour cost is reduced and availability of labour is improved. CNC machines produce repeated jobs at high output consistency. This has resulted in reducing the rejections of the finished component increasing the revenue along with productivity. In conventional machines errors introduced to operator fatigue, carelessness, skill etc is a major hindrance to achieving high productivity. This enables small manufacturers to price their products more competitively. Small manufactures can now try and supply complicated and precision components reacting to the new demands of the customer. CNC machines are highly flexible, making it easy to manufacture different types of components by changing stored "CNC Part Program" along with jigs fixtures and toolings". Thus, it is very ideal for small batch quantity production requirements. Suppliers can now adapt quickly to different order requirements."

According to Gangrade, the data from a leading CNC manufacturer indicates that almost 50% of CNC system based machines are with small manufacturers, having less than 20 machines. "The presence of CNC machines is rapidly growing with small manufacturers due to the good pricing from machine tool manufacturers. Also, they are supported by various government schemes to buy CNC. As per an estimate CNC machines are increasing at the rate of approx. 2000 machine per month in India," he says. While surveys would corroborate that point, Banerjee feels that CNC machines are still in a nascent stage in India. Banerjee says, "Although there are no radical advancements in 3D engraving tools, the overall CNC machine tools industry is witnessing a constant development of new technologies and advanced features. Yet, it is in the nascent stage and will gradually grow."

TIME FOR TENACITY

However, the Indian machine tool industry has shown its determination to meet the close to 33% of the overall consumption despite the challenges it faces because of the lack of big investments. The major players in the CNC market face a number of challenges which are hampering their development and growth. Import dependency for critical CNC components act as major impediments for this market. High cost of CNC machines present a major challenge for market growth. Depreciation of currency coupled with lack of skilled labour also serves to be major hindrances.

The initiatives required to promote the development of the CNC machine tools market include correcting the technology denial that exists across the industry among many manufacturers, along with the fiscal measures that are needed for the development on the CNC machine tools market. The Indian Machine Tool Manufacturers' Association (IMTMA) statistics speak out a story. Out of the Rs 11,818-crore sales revenue generated in 2010-11 from consumption, imports was at Rs 7,722 crore and the domestic output accounted for Rs 4,096 crore. In regard to the orders booked, demand for CNC machines during FY11 was worth Rs 3,775 crore while the non-CNC machines touched Rs 1,203 crore. Analysts feel that India must boost its production capacity with help from the centre in adopting steps to enhance growth of the machine tool SMEs.

Many SMEs in the CNC machine tools industry in India are awaiting a noteworthy makeover of the segment. For this, they too must aim reach atop the ladder in terms of quality, productivity and efficiency. Understanding the requirements of the global market and opening up to accept holistic manufacturing solutions are the only way forward. The machine tools industry in India has remained in the news for its strong growth potential and the significance it holds for the nation's development. It is now time that the segment actually gets down proving its grit. Of course, it could well need ignition from that spark of CNC!