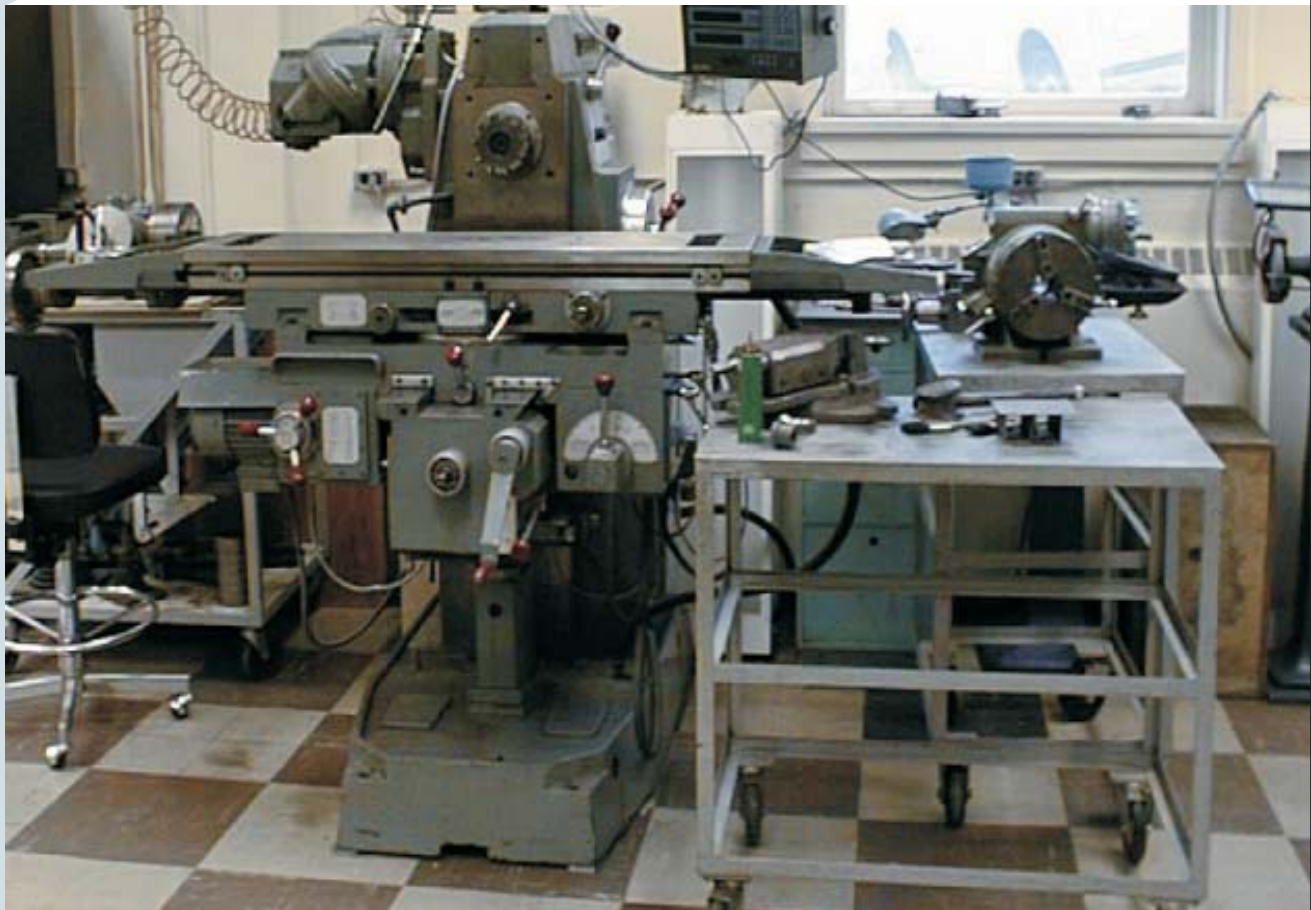




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# MACHINE TOOLS





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*A report by KPMG for IBEF*

## Market Overview

The global machine tools industry had a turnover of about US\$ 45.3 billion in 2004, a 23 per cent growth by value over the previous year. Japan is the leading machine tool manufacturer in the world with a production of over US\$ 10.5 billion in 2004, which forms nearly 23 per cent of the total world production. The global machine tools industry had a turnover of about US\$ 45.3 billion in 2004, a 23 per cent growth by value over the previous year. Japan is the leading machine tool manufacturer in the world with a production of over US\$ 10.5 billion in 2004, which forms nearly 23 per cent of the total world production. Germany, Italy and China are second, third and fourth respectively in the machine tools industry. In terms of consumption, China is the leader, with US\$ 9.3 billion worth of consumption, accounting for over 20 per cent of machine tools consumed worldwide.

India ranks nineteenth in production and sixteenth in consumption of machine tools in the world. The Indian machine tool industry averaged more than 35 per cent growth in 2004-05. Imports exceeded production in the year 2004 with US\$ 356 million worth machine tools being imported while the production was only US\$ 225 million. Machine Tools form 1 per cent of India's engineering industry and contributes 0.3 per cent of total machinery exports.

## Structure and current Scenario

The Indian machine tool industry currently consists of about 450 manufacturing units of which approximately 33 per cent (150 units) fall under the organised category. Further, ten major Indian companies constitute almost 70 per cent of the total production. The government-owned Hindustan Machine Tools Limited (HMT) alone accounts for nearly 32 per cent of machine tools manufactured in India. Approximately 75 per cent of the Indian machine tool producers have received the coveted ISO certification. While the large organised players cater to India's heavy and medium industries, the small scale sector meets the demand of ancillary and other units.

## The machine tool industry can be classified into four main categories

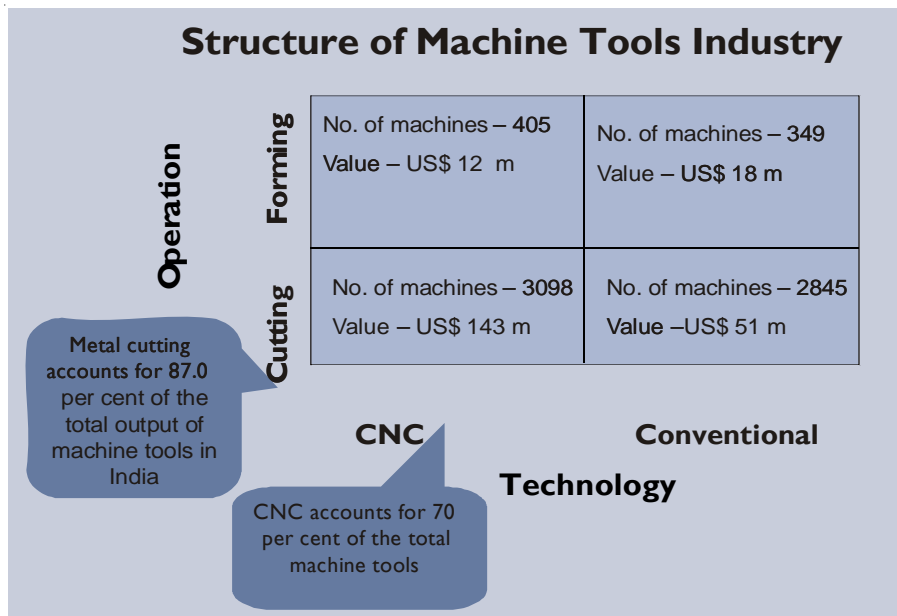
The machine tools industry can be broadly classified into metal-cutting and metal-forming tools, based on the type of operation. Metal cutting accounts for 87 per cent of the total output of machine tools in India. Key metal cutting tools include

turning centres, machining centres and grinding centres, which account for nearly two-thirds of the total metal-cutting produce. Metal forming is dominated by presses, which account for 51 per cent share.

Based on technology, machine tools can be classified into CNC (Computerised Numerically Controlled) and Conventional tools. CNC machine tools, which are highly productive and cost effective, comprise nearly 70 per cent of machine tools. Of these, CNC turning centres, machining centres and grinding centres are the biggest segments, accounting for nearly 81 per cent of the total in 2004.

### The industry has made a quantum jump in the domestic market

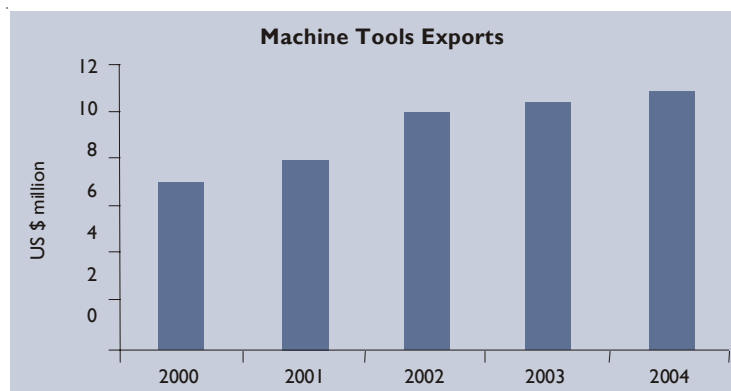
India's machine tools industry was worth US\$ 225 million in 2004, which represents a growth of 95 per cent over the previous year. Of this, metal cutting machine tools accounted for US\$ 194 million and metal forming machine tools were worth US\$ 31 million. In terms of technology classification, CNC machine tools were worth US\$ 155 million (a growth of 104 per cent over the previous year) and conventional, US\$ 70 million (79 per cent growth). A large part of the increase can be attributed to a surge in orders from key manufacturing sectors such as auto ancillaries, defence and railways.



Source: KPMG Analysis, Annual Report 2005  
All figures are for 2004

### There has been a gradual and steady increase in exports of machine tools from India

Demand surge in the domestic market in 2004 led to a moderation in focus of Indian machine tool manufacturers in tapping new opportunities in overseas markets. As a result, exports increased only marginally by 3.0 per cent in 2004, over the previous year. 214 machine tools worth US\$ 10.9 million were exported in 2004.

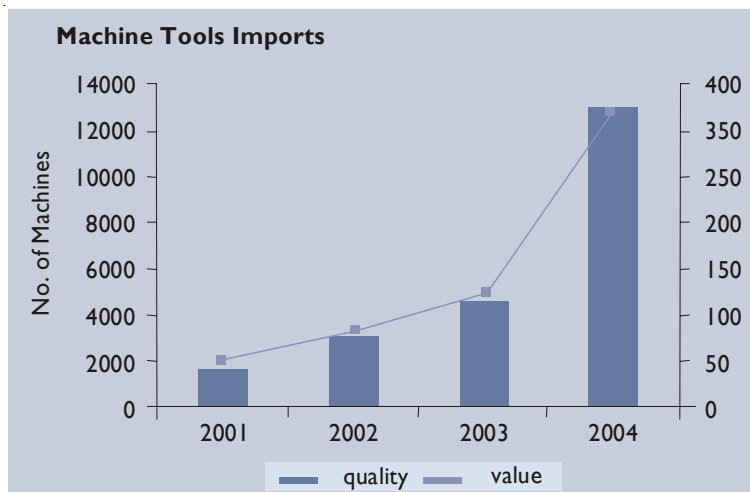


Source: <http://www.imtma.org/pdf/glance2005.pdf>

During the period 2000-2004, exports of machine tools from India have risen from US\$ 7.16 to US\$ 10.94 - a CAGR of 11.2 per cent.

India exports machine tools to 51 countries, including to prominent ones such as Germany, the United Kingdom, Australia, Japan and the United States. The key categories in exports were machining centres, grinding centres, electro-discharge machines and turning centres, which together accounted for nearly 75 per cent of exports in 2004.

#### The industry depends on imports to meet demand



Source: <http://www.imtma.org/>

The Indian machine tools industry has had a heavy dependence on imports over the years. Imports of machine tools, which increased from US\$ 65 million to US\$ 147 million between 2001 and 2003, at a CAGR of 50 per cent, got a boost from the resurgent industrial sector in 2004, resulting in a sharp 137 per cent increase. 12,667 machine tools valued at US\$ 356 million were imported in 2004, making it the largest import ever to the Indian market.

Bulk of the imports comprised metal-cutting machine tools, which witnessed a 129 per cent increase over the previous year. Machining centres, turning centres, grinding centres and presses comprised nearly half of the total machine tool imports into the country in 2004.

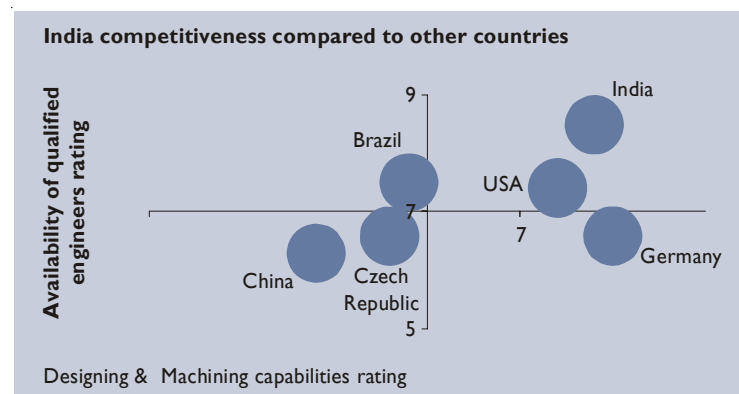
The increasing imports imply that India's domestic production has not kept pace with the growth in demand for machine tools, indicating a potential for investment in domestic capacity.

## Competitive Advantages

India has several strengths that support the domestic machine tool industry that are discussed below.

### Design skills

While offering advantages of low cost, India has a comparative advantage over competing economies, in terms of availability of engineering and design skills that are either missing in competing countries or are expensive. Studies have rated India higher in terms of manufacturing capability and availability of quality engineers. This design strength gives the Indian machine tool industry a competitive advantage. This has been recognised by the European machine tool companies, some of which are now coming forward with joint design and manufacturing projects. For example, recently a leading Swiss maker of machine tools for the aerospace industry and BFW (Bharat Fritz Werner) collaborated in the design of a 5-axis turbine blade making machine which was manufactured in BFW's Bangalore factory.



### Availability of raw materials

Key raw materials for the machine tools industry, such as ferrous and non-ferrous metals, particularly steel and aluminum, are available in India. The production of iron ore was 120.6 million tones in 2003-04 growing at a compounded annual growth rate of around 14.4 per cent from 2000-01 to 2003-04. Indian is the eighth largest steel producer in the world and contributes one thirds of the global output steel.



## Sustained growth in demand

Demand for machine tools accrues from primary goods and intermediate goods manufacturers. The primary user industries include the automotive sector, capital goods sector and consumer durables sector. Prominent users of machine tools in the intermediate goods sector include the auto components, the ball and roller bearings and electronic components. Most segments of the Indian automotive, capital goods, consumer durable, as well as intermediate goods sectors recorded high to moderate growth in turnover during 2004-2005.

### Automotive Sector

The Indian automotive industry has been growing strongly at a CAGR of nearly 11 per cent, over the past 5 years (2000-01 to 2004-05). All key segments of the auto industry have registered growth. While commercial vehicles have been growing at about 15 per cent, Passenger vehicles have clocked 13 per cent, two wheelers 10.2 per cent and three wheelers 7.3 per cent growth. The market for passenger vehicles has already crossed 1 million units and is growing. The export of automobiles from India has also been growing at a healthy CAGR of nearly 25 per cent.

Buoyed by this growth, many Indian and multinational players have gone in for additional capacity. For example, Maruti Udyog, India's largest car manufacturer, has expanded capacity, as well as invested in an aluminium foundry and a diesel engine plant. Suzuki Motors is invested separately in manufacture of Motorcycles, which are expected to be launched later this year. Hyundai Motors recently announced plans to significantly increase capacity.

These developments present a positive outlook for India's machine tools industry.

### Capital goods sector

The capital goods sector is in a growth phase, with segments such as diesel engines, electric motors, industrial furnaces, textile machinery, tractors and pumps experiencing growth ranging between 20 to 38 per cent in the fiscal year 2004-05. The earthmoving & construction equipment and transformer segments experienced moderate growth during April 2004 to March 2005.

### Consumer durables sector

Just like the auto sector, prospects in the country's consumer durables industry remain bullish with impressive to moderate growth in most segments for six years in a row. Video recorders, air conditioners, electric fans, refrigerators, washing machines and colour televisions recorded growth of 20.0, 12.0, 28.0, 15.0, 14.0 and 15.0 per cent, respectively in the fiscal year 2004-05.

### Intermediate goods Sector

Prominent users of machine tools in this sector - auto components, ball and roller bearings and electronic components - experienced healthy growth in 2004-2005. The automotive component industry witnessed growth of 30 per cent in output in 2004-05 in the wake of increased export orders. Most auto component manufacturers in India are looking at an aggressive growth in both domestic and exports markets. Electronic components segment, likewise, posted 31.0 per cent growth during year. The ball and roller bearings industry grew by 20.5 per cent in 2004-05.

The strong growth witnessed across sectors with prospects of sustained growth in the future, augurs well for India's machine tools sector, and can power consistent demand growth for the industry in future.

### Presence of supporting industries and institutions

#### Foundry and castings

The machine tools industry requires high quality, complex castings and India has a well established foundry industry to support the sector in this regard. India is currently the sixth largest castings producer in the world, with an estimated output of more than 3 million tons annually. The Indian foundry industry encompasses different materials, both ferrous and non-ferrous, as well as different technologies, from traditional green sand moulding to advanced die and investment castings.

#### Engineering institutions

India has a well-developed technical and tertiary education infrastructure of over 250 universities, 1500 research institutions and over 10,000 higher education centres. Institutions such as the Indian Institutes of Technology (IITs) and National Institutes of Technology (NITs) graduate thousands of qualified engineers every year. The availability of engineering and design skills is a key strength that the machine tools industry can leverage.

### Increasing competition leading to improved capabilities

While the machine tools industry in India has nearly 150 organised players, 70 per cent of output comes from the top ten manufacturers. Increasing competition among the top players, and the entry of MNCs like ABB and Siemens into the sector, has led to an overall improvement in capabilities and performance,

with companies focusing on technology, design and product development. Most machine tool manufacturers are adapting new manufacturing techniques like TPM, TQM, and Six Sigma to deliver world class manufacturing solutions.

Name of the company	Parent company	Output	Products/ divisions/ sectors served	Plants
BHEL	Public sector enterprise. India's largest engineering and manufacturing enterprise	Sales turnover - US\$ 2,042.89 million in 2004	Caters to power generation and transmission, transportation (especially railways), telecom, renewable energy and industry at large.	14 manufacturing divisions, four power sector centres, over 100 project sites, 8 service centres and 18 regional offices.
BFW(Bharat Fritz Werner) Ltd	Largest machine tool manufacturer in the private sector. German collaboration.	-	Horizontal and vertical machining centres, CNC Milling machines, special purpose machines	Head office and manufacturing facility at Bangalore and regional offices at Chennai, Coimbatore, Pune, Hyderabad, Mumbai, Kolkata, and New Delhi.
Engineers India Ltd.	a government undertaking (as 90.39 per cent stake is owned by government), under Petroleum & Natural Gas Ministry	Turnover - US\$ 169 million in 2003	Highways & bridges, airports, Mass Rapid Transport Systems, ports & terminals, Power projects, non-conventional / renewable energy Sources, specialist materials and maintenance services, intelligent buildings, water and urban development projects	Besides its Head Office at New Delhi, EIL has branch office at Mumbai, zonal office at Kolkata, regional offices at Chennai and Vadodara and inspection offices at all major equipment manufacturing locations in India. It also has overseas offices at London, Abu Dhabi, Kuwait, Qatar, Malaysia and Australia.

Name of the company	Parent company	Output	Products/divisions/sectors served	Plants
Hindustan Aeronautics Ltd.	Public sector enterprise	Sales - US\$ 827 million in 2004.	Supplies / services are mainly to Indian defence services, coast guard and Border Security Force. Transport aircraft and helicopters have also been supplied to airlines as well as state governments of India.	Facilities are located throughout India including Nasik, Korwa, Kanpur, Koraput, Lucknow, and Hyderabad.
Crompton Greaves	Part of the B.M.Thapar Group	Sales - US\$ 390.06 million in 2004	largest private sector enterprise in the business of electrical engineering	Bhind, Mumbai, Nashik, Hosur, Goa
Elgi Equipments	Market leader and Asia's largest manufacturer of air compressors and automobile service station equipment.	Sales - US\$ 69.87 million	Elgi products have wide range of applications in areas ranging from mining, defence, transport, pharmaceuticals, power, oil, railways, chemicals, textiles, printing to ship building, paper, electronics, tele-communications, medical, food & beverages and plastics.	Singanallur and Kurichy in Coimbatore

Name of the company	Parent company	Output	Products/ divisions/ sectors served	Plants
HMT	Public sector Enterprise	Sales - US\$ 34.02 million in 2004	Metal forming presses, die casting & plastic processing machinery, CNC systems & bearings	Srinagar, Mohali, Hyderabad, Kalamassery and Ajmer
Kirloskar Oil Engines Ltd( KOEL)	Part of the century old Kirloskar group promoted by S L Kirloskar.	Sales - US\$ 2,042.89 million in 2004	2 segments - engines and engine bearings & valves. Also in business of manufacturing gray iron castings and trading in oil, power generation	manufacturing facilities in Pune, Nasik, Ahmednagar and Phursungi
Larsen & Toubro Ltd (L&T)	Part of L&T group. India's largest engineering and construction conglomerate.	Sales - US\$ 2,280.06 million in 2004	Four segments namely Engineering and Construction (E&C), Cement, Electrical and Electronics and Diversified business. It also has 19 subsidiaries.	Coimbatore in Tamil Nadu, Kurnool District in Andhra Pradesh and Hassan in Karnataka.
	originally incorporated as Thermo-Dynamics Pvt., Ltd on 30th June, 1980. On 1st July, 1980 Wanson (India) Ltd. along with Thermax India (Pvt) Ltd. was amalgamated with the Company and subsequently the name was changed to Thermax Pvt.	Sales - US\$ 129.52 million in 2004	6 core businesses - five boilers and heaters, absorption cooling, water and waste solutions, chemicals for	five manufacturing facilities, 12 sales

Name of the company	Parent company	Output	Products/divisions/sectors served	Plants
Cummins India Limited	Part of Cummins Inc., world's largest designer and manufacturer of diesel engines	Sales - US\$ 220.26 million in 2004	Power generation, construction & mining, compressors, locomotives, marine, oilfields, fire pumps & cranes, automotive and special applications.	Nashik, Bardez, Sholapur, Pune, Bharuch
Alfa Laval (India) Ltd	Subsidiary of Alfa Laval AB, Swedish Multinational engineering company. The company has approximately 9,000 employees	Net sales - US\$ 77.8 million in 2003	Alfa Laval India has two divisions, namely, Equipment division and Process Technology division	Manufacturing facilities in Pune, Sarole and Satara.
Asea Brown Boveri Ltd (ABB)	Subsidiary of ABB Ltd - Zurich which is a leader in Power and Automation technologies. The Company operates in around 100 countries and employs about 120000 people.	Net sales - US\$ 303.4 million in 2003	ABB India caters to power and industry sectors.	Vast installed base, extensive local manufacturing in 8 units and a nationwide marketing and service presence. ABB has also set up a global R&D centre in Bangalore
Siemens Ltd.	Flagship of the Siemens Group in India. Siemens AG, the parent company holds 54.63 per cent in Siemens Ltd.	Sales - US\$ 413.33 million in 2004	Power generation and distribution equipment, industrial projects and equipment, transportation systems, communication and healthcare products.	Aurangabad, Nashik, Goa, Thane and North 24 Parganas

## Future Outlook

India's machine tools industry is on the growth path. The increasing domestic demand is not currently met by domestic production, leading to dependence on imports. Favourable market conditions, availability of materials, manpower and support industries, and support from government is expected to lead to increased investment in this sector in future. Many players in the sector are looking to increase their capacity. With improvements in R&D, design and product development capabilities, India has the potential to improve its global presence in machine tools.

## Exchange rates used

The following exchange rates have been used for Rupee to Dollar conversion.  
(Source: <http://www.x-rates.com>)

Financial Year	1 US\$ = Rupees
1995-96	33.48
1996-97	35.58
1997-98	37.22
1998-99	42.13
1999-00	43.40
2000-01	45.75
2001-02	47.73
2002-03	48.42
2003-04	45.95

## Contact for information

Information on the market and opportunities for investment in the machine tools sector in India can be obtained from the Indian Machine Tools Manufacturers Association.

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