the INDO-ITALIAN Chamber of COMMERCE and INDUSTRY

IICCI – Short Market Overviews

The Engineering Sector in India

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1. The Engineering Sector in India – An Overview

Mechanical engineering industry in India is showing rapid advancements in every sphere of the economy with Indian companies forging ahead in making of defense equipments, aircrafts, sleekly designed cars, vehicles and various industrial devices.
The name technology is now closely associated with mechanical engineering because of its vital contribution to this. Urban development with building of bridges and flyovers, dams etc all requires the contribution of Indian Mechanical Engineering Industry.
Since end of 2002, the industry picked up momentum as steel industries gradually was moving up. In 2004-05, production increased by 26.9% from 732 thousand tonnes to 929 thousand tonnes, while exports increased by 24% from €187mn to €232mn. Capacity utilisation also improved considerably from 40-50% in previous years to 85% of the additional capacity added during the last two years (1.5m approx) inclusive of overseas acquisitions. This was largely due to the revival in demand from the automotive sector and particularly the passenger car segment, which recorded an excellent performance in both domestic market and exports.

Mechanical Components

A mechanical component is a part/sub-system used in the assembly of mechanical systems/products. The classification of mechanical components can be the following:

- Mechanical parts and sets (metal manufacturing on iron and non-iron alloys, stainless steel and aluminium)
- Various mechanical components
- Precision components
- Connectors, pistons, special screws
- Special equipment

The table given below presents industry size and trends by sub-segments

Table 1 - Industry Size & Trends

Sub-segment	*Market size (€ mn) FY 2006*	*Market size (€mn) FY 2005*	*Growth %over FY 2005*
Mechanical parts and sets	1953.6	1483.8	31.67
Mechanical components production	164.18	150.18	9.3
Precision components	158.18	128.72	22.8
Connectors, pistons, special screws	8072.7	6154.9	31.16
Special equipment	1060	963.6	10
Total	11408.7	8881.2	28.46

2. Engineering and its Industrial Applications

Indian Castings and Forging Industry

This sector includes low-tech items like castings and forgings.

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The future looks encouraging for castings and forgings industry in terms of the expected surge in global demand. In 2006-07, production is expected to touch 1180 thousand tonnes while exports are expected to touch €290m. As a result of liberalisation, more MNCs have entered the domestic automobile market. This has opened up more business opportunities for castings and forging industry.

Seamless Steel Pipes & Tubes

This sector includes steel pipes and tubes (including stainless steel).

The size of Indian seamless tube market is around 0.5m tonnes. In India, there are six manufacturers of seamless steel pipes and tubes. ISMT Limited, one of the major companies is the largest integrated manufacturer of specialised seamless tubes in the Asia-Pacific region.

The industry is able to manufacture tubes up to 245mm OD and is, by and large, meeting complete requirement of bearing and high-pressure boiler industries. With the expected substantial growth in the power and automobile sectors in the future, the demand pattern may change in favour of these two sectors.

In the oil sector, three units have got American Petroleum Institute's (API) certification for manufacture of line and casing pipes. Oil sector accounts for around 60% of total requirement of seamless steel pipes. Bearings, automobile and boiler sector contribute around 30% demand.

Precision Components & Equipment

This segment is growing rapidly due to growth in automobile sector along with its component manufacturing facilities. Trend in the NC mechanical component production during 2003-06 is given in the following table.

In 2005-06, NC mechanical component output was worth €81m, up by 17.48% over 2004-05.

Connectors, Pistons, Special Screws

This sector includes fasteners (nuts, bolts, and screws), bearings and other auto components like pistons (including industrial pistons).

Fasteners are broadly divided according to consumer segments—automobile sector and industrial sector. Industrial fasteners are used in varied applications like construction, railways and manufacturing sector. Total demand for fasteners is almost equally divided between automotive and industrial sectors. Thus, automobile sector is the largest end-user segment for fasteners.

Industrial Fasteners and Bearings

Total market size of the fastener industry is estimated at around €272m in revenues. Fasteners market can be classified into mild steel (MS) and high tensile (HT) fasteners. MS fasteners constitute about 30% of the market size and are mainly produced by the unorganised sector, while HT fasteners are produced primarily by the organised sector.

Automobile sector is the major demand driver for the bearing industry and constitutes almost 50% of the total demand in value terms. The demand from the automobile sector is almost equally divided between OEM demand and replacement demand. The total size of the bearings market by revenues is estimated in the range of € 450- 540mn.

The bearings industry consists of bimetal bearings and anti-friction bearings. The anti-friction bearings comprise €270-360 mn of the bearings market and bimetal bearings comprise the rest of the market. The anti-friction bearings can be further divided into ball bearings and other types of bearings like roller, needle, taper and cylindrical. The ball bearings segment is the biggest segment of the industry and comprises approximately half of the total market size in volume terms.

Imports comprise approximately 25-30% of the total market. Imported bearings are mostly of large dimensions and are not produced in the country due to relatively low demand for the specialised segments.

Special Equipment & Machines

This sector includes, process control instruments, analytical instruments, electrical test and measuring instruments, survey and geo-scientific instruments and medical instruments.

According to estimates by Industry Chambers, at present, the total cost of production of instrumentation related products in India is around Rs50 billion per annum. Sector-wise break-up is shown in the Table. The growth rate is 10-15% per annum. This production is about 15% of the total demand; the rest is met by imports. Except for a handful of them, all companies are operating in low-end products.

Table 2 - *Annual production of instrumentation products in India (€ mn):2003-06*

	2003-04	*2004-05*	*2005-06*	*% Δ 2005 – 04*	*2003-06 CAGR*
Process Control Instruments	60.67	61.01	68.00	11.38	5.87
Analytical Instruments	165.6	180.3	201.9	11.92	10.41
Electrical Test & Measuring Instruments	421.1	437.3	498.1	13.90	8.76
Survey & Geo-Scientific Instruments	33.30	33.51	78.28	133.56	53.31
Medical Instruments	108.2	125.4	136.5	8.79	12.31
Total	788.9	837.8	982.8	17.31	11.61

Hydraulic Machinery

The Indian hydraulic industry had its beginning in the sixties and the main objective behind establishing this industry was to provide substitutes for imported machinery. Hydraulic machinery from a long time is used in heavy engineering industries (extensively like shipping, power driven machine tools, automobiles, etc.). Growing investments in every sector and the Capital Goods Index which has shown a growth rate of 13.6% in FY06 are projecting a high positive image over the demand for hydraulic machinery. Demand for hydraulic machinery for FY05 was projected to be around € 253.9mn which is growing at a compounded annual growth rate (CAGR) of 11.99% from 2002 till 2005.

There is a good demand for hydraulic machinery but the Indian manufacturing base is yet to come up with a suitable technology base to manufacture heavy duty hydraulic systems.

Foreign investment in this sector would be conducive for its growth. However, precision casting manufacturers in India at present are not many but with increased inflow of foreign investments more organized casting manufacturers will be operational. The current surge in automobile demand is another driving factor for a growth in demand in hydraulic machinery.

Indian Pumps Industry

The Indian pumps industry caters to a range of sectors from agriculture to nuclear power generation. The industry, holding €500m worth of global market share as in 2005, is expected to capture a bigger slice in 2006. Pumps Manufacturing Industry in India is growing at a rate of 10-12% per annum.

Approximately 6,000 pumps are manufactured in a day in India. Technical Sustainability: India has today become a reliable, technically competent, competitive and enterprising outsourcing option for many multinational companies in industrial pumps. This has emerged through technical collaborations and joint ventures that Indian companies have with multinational majors. All the core sectors of the industry namely power, oil & gas, water & infrastructure projects, metal & mining, chemicals, drugs & pharmaceuticals, food & beverages require various types of pumps and all these industries are growing at a significant rate today in India.

Textile Machinery

Textile machinery manufacturing is a €353.5mn industry in FY06. This industry derives its demand from the textile industry which is one of the oldest industries and has been a back bone for the Indian economy. Growth in Textile machinery production in India has been very dull for quite some time; this industry has seen a near to nil growth during the period of FY02 to FY04.

But in January 2005 the industry had a turn around due to quota abolition that brought about a positive note in all the textile industries and prompted them to go for technologically advanced machinery for producing international quality of fabrics. As a result textile companies preferred to import textile machinery from abroad as domestically manufactured machinery were not technologically advanced like machinery manufactured in European countries.

However, domestic textile machinery production has registered a growth of 9.16% and 53.36% for FY05 and FY06. These growth rates were achieved by domestic manufacturers with a shift in technology levels of machinery and the competitive prices that was offered. Customs duties on imported textile machinery has been reduced, reduction in government restrictions on the import of used capital goods has also prompted industries to import second hand machinery from abroad with a good residual life. The existing units undertook capacity expansion that triggered a growth in textile machinery production.

Printing Machinery

India has more than 130,000 printing presses by the end of 2005. Though demand for printing machinery in India for FY06 is around €157.9mn, production of printing machinery for that duration is valued at €51.78mn, while the remaining requirement is met through imports which are of the order of about €92.47mn.

The sector that is driving the demand for printing machines is the Indian newspaper industry with a turnover of €1.37 billion in 2004, which is growing at a CAGR of 6.9% during 2000-04. This industry has attracted capital investment of €1.70mn in two years by the end of 2004. The Indian media industry is undergoing a modernization process in order to gain from these growth opportunities. In this process they have realized the need for technically advanced printing machinery to achieve success in the tough competition. Since the machinery manufactured in India is not meeting their requirements many newspaper/media companies are importing them from Europe and Japan.

The Indian printing machine manufacturers are not equipped with the latest technology hence large demand is catered through imports. Recently the print media has been allowed for 100% foreign direct investment and as a result the foreign print media companies are attracted towards India. This may further increase the growth in the demand for printing machines.

Aeronautical Industry

Aviation is the key driver to any country's global economy. Air travel in India is no longer considered a luxury but a necessity. This has been realized by the Indian government who have designed plans and started implementing them in order to sustain the growth rate that is being achieved in recent years. These plans constitute investing €2.51bn in the next five years for buying aircraft, upgrading airports, conducting research and development, improving air traffic control and fabrication of components. This will create a huge impetus in the growth of the Indian aeronautical industry.

The growth in aeronautical industry is almost certain as aviation industry in India is poised to grow further. Another reason for the high growth in aviation is due to no frill airlines (low cost airlines).

Due to an upsurge in air traffic in India aircraft maintenance is in great demand. It is even economical to have maintenance facility for aircrafts in India compared to other developed countries. Opportunities are envisaged in manufacturing light bodied aircraft, other aircrafts and components for aircraft maintenance. 100% FDI is allowed in airport infrastructure and 49% for civil aviation. This will create lots of opportunities for foreign investments as modern airports will have better aircraft handling and landing facilities. As a result the aeronautical industry and its allied engineering products will have a great market potential in India.

Shipbuilding Industry

Indian sea trade by volume and value is 90% and 70% respectively. But the priority for the shipbuilding industry has been very poor till the mid 90's. The shipbuilding policy was liberalised in 1991 by allowing private sector participation in building all types of ships. The Indian shipbuilding industry has risen to the 8th rank globally in terms of order book position. Shipbuilding order book has crossed €750mn of which bulk cargo occupies a major share with €247 Export revenue is two thirds from the total revenue and export orders are mainly from the European owners.

Private and public participation in shipbuilding is equal at present but in future it is expected that private players will have a major share. The three important private players in this industry are- ABG shipyard, Bharati shipyard and Chowgule shipyard. The order book of these companies by the end of 2005 was €210.5, €128.3m and €83.13m. The Indian shipbuilding industry is facing many challenges such as lack of design and heavy engineering facilities, absence of exposure to new technologies that can be incorporated in the ships, being confined to small specialised and conventional vessels and scarcity of qualified professionals.

About 80% of the raw material is imported thereby imposing higher cost of manufacturing coupled with poor infrastructure and inefficient supply chain management, impeded a healthy growth of the industry.

Valves Production

Valve production in India comes from both the organized and unorganized sector. The organized sector of the valves industry is around Rs 950 crore (€157.9mn), while the unorganized sector contributes Rs 550 crore (€91.45mn) as per 2005 figures.

Valves are imported heavily from China and other countries; Import for the FY06 is around Rs 460 crore (€77.34mn), an increase of 24% to that of previous fiscal year. The import is largely for precision type of valves mainly used in process industries like Pharma, Food

processing, steel, and chemical and refineries. This industry is growing at an average rate of 12%.
Valve production in India does not have immense opportunities for foreign investment. This is due to the fact that the replacement market in India is mostly catered by unorganized or mid size valve manufacturers. However, current industrial developments in the steel industry and oil & gas explorations will certainly promote foreign collaborations in technology.

Industrial Use Engines (Turbines and Generator Sets)
The capacity established for manufacture of various kinds of turbines such as steam and hydro turbines including industrial turbines is more than 7,000MW per annum in the country. Apart from BHEL, the public sector unit that has the largest installed capacity, there are units in the private sector manufacturing steam and hydro turbines for power generation and industrial use.
The manufacturing range of BHEL includes steam turbines up to 660MW units rating; the facilities are available for 1,000MW unit size. They have the capability to manufacture gas turbines up to 260MW (ISO) rating and gas turbine based co-generation and combined cycle systems for the industry and utility applications. Custom-built conventional hydro turbines of Kaplan, Francis and Pelton types with matching generators are also available indigenously. AC generators manufactured in India are on par with international ones and consistently deliver high quality power with high performance. Domestic manufacturers are capable of manufacturing AC generator right from 0.5KVA to 25,000KVA and above with specified voltage rating. The imports and exports during 2004-05 were Rs16.76 billion (€304.7mn) and Rs5.9 billion (€ 107.2mn) respectively.

3. Import duties

Item	*Import duty*	*Additional Duty*	*Edu Cess*	*Total*
Machine Tools	15%	16%	2%	36%

The duties are calculated as per the following methodology in India:
Assumed cost of bed 100 Euro CIF Mumbai
Basic Customs duties 15% =15 Euro
Total cost 115 Euro
Addl Duty 16% = 18.40 Euro
Total 133.40 Euro
Add Edu Cess 2% = 2.67 Euro
TOTAL LANDING COST 136.00 Euro