

Foundry industry: Large untapped opportunity

The foundry industry, also known as the casting industry, plays the role of a 'mother' industry in India. It is a core industry producing cast metal components which serves as a basic raw material for many sectors. Production of castings in India took a dip in 2008-09 due to the global economic crisis but has recovered strongly in 2010-11. Growth in the industrial sector, post-recession, especially in manufacturing activities, has given a boost to the foundry industry.

According to the recent World Census of Castings by Modern Castings, the Indian Foundry Industry is the second largest casting producer in the world, producing around 9.05 million tonne of castings in 2010-11. It is also one of the top ten countries in terms of average production of castings per plant. In 2009, it was also the fastest growing top-10 nations increasing its casting tonnage by 9% over 2008. India currently has over 4,500 foundries in the small, medium and large scale sectors with around 500 units having international quality accreditation. In India, the foundry industry is a major feeder to various other sectors and the automobile sector accounts for almost one-third of the total market.

Exports and imports of castings have grown consistently in India, with export value being much higher than imports. Foundry exports have grown by 48% in 2010-11 and have reached pre-recession levels. USA accounts for one-fourth of the total exports

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from India, with Germany, UK, South Africa, Italy and Canada being other major importers. Foundry imports have been growing strongly over the years with almost one-third of the total being sourced from China. Germany, USA, Oman, Italy, Korea and Japan are the other prominent importers of castings.

Foundry units in India are mostly concentrated in clusters across various regions. Maximum concentration of foundries is in Maharashtra, followed by West Bengal, Tamil Nadu and Andhra Pradesh. The major foundry clusters include Batala & Jalandhar in Punjab, Ahmedabad & Rajkot in Gujarat, Kolhapur in Maharashtra, Belgaum in Karnataka, Coimbatore in Tamil Nadu, and Howrah in West Bengal.

The Indian economy has been performing well over the last few years and the trend is likely to continue. The foundry industry will look to capitalize on this opportunity. Growing demand from the automobile and engineering sectors coupled with supportive government participation will drive the growth of the foundry industry in India.

Products

Castings enable many pieces to be combined into a single part, eliminating assembly and inventory and reducing costs by 50% or more compared to machined parts. The desired dimensional accuracy and surface finish of castings can be achieved by the choice of process and its control. Castings can range in size from a few grams to several tonne, from simple to intricate shapes and order size of one-off to mass production.

Process

The foundry process consists of three stages including melting, casting and finishing. The melting process includes melting the charge in specialised furnaces, refining the melt, adjusting the melt chemistry and tapping into a transport vessel. In casting, the molten metal is poured into moulds which are designed in requisite forms. The solidified metal component is removed from the mould by shaking or tumbling process while the casting undergoes degating and the surface is cleaned using a blasting process. Finishing involves grinding, sanding, or machining the component to achieve the desired

dimensional accuracies, physical shape and surface finish.

Industrial casting processes can be classified based on the mould material, method of producing the mould and the pressure on molten metal during filling. Casting processes largely comprise permanent moulds and expendable moulds. Permanent moulds are used in gravity and pressure die casting processes, suitable for producing a large number of components. In expendable mould processes, a new mould is required for every casting or a bunch of castings with a common gating and feeding system produced in the same mould. Popular casting processes include sand casting, investment casting, gravity die casting and pressure die casting.

Technology

Foundries across India are presently undergoing upgradation of facilities and technology in a bid to improve their productivity and increase capacity. The Indian foundry industry, which is looking at doubling annual castings production to about 20 million tonne by 2020, has urged the central government to set up a Technology Upgradation Fund (TUF) with a corpus of Rs 200 billion to help modernise the sector.

Growing concerns regarding the quality and quantity of castings has induced foundries in India to produce larger casting facilities over the next few years. To maximize export potential, foundries are setting up world class production facilities equipped with computer numerical control (CNC) machines. Elaborate quality management system and application of information technology for manufacturing, metal solidification and mould flow simulation have started finding their application in modern foundries. Incorporation of new technologies and facility upgradation has now become indispensable for the foundry industry and this will stimulate

the market to grow strongly in the near future.

Challenges

Although the foundry industry in India is bullish and envisages strong growth, certain hurdles still pose as considerable threats. Most of the foundries in India fall under small and medium enterprises and cannot afford the high costs for technologically advanced equipment or automation. Further, their marketing strength is also limited and presence in the global market place is difficult to sustain. Inability to outgrow the domestic demand for castings and supply quality products to the global market acts as a huge barrier for the industry to grow further.

High capital costs of the foundry market compels units to produce substandard products and cater largely to local and replacement markets. Lack of adequate infrastructure in the foundry industry not only affects their production capacity, but also their export business. Additionally, the threat of cheaper imports from China also looms large over this industry indicating sheer need to overcome market barriers.

Steep increase in cost of raw materials has resulted in the closure of around 500 units across India in the last few years. Although India is an exporter of pig iron, it has to import scrap metals and coke for the casting process; the procurement cost for which has been increasing consistently over time. Moreover, cost recovery for raw materials is very difficult as most contracts are long term contracts without any clause for price adjustment. Fluctuating raw material supply also affects the foundry business in India, leading to production irregularities, which acts as a significant bottleneck to the growth of the market.

Low capacity utilisation of foundry units arises from idle time among workers due to power cuts and lack of trained manpower to handle the production processes.

Energy is a major issue in various parts of India and most foundries operate at just 50% of their capacity because of power shortage. Energy cost typically varies between 12-15% and cost of procuring energy is also escalating at a very high pace, acting as a major challenge for the foundry market to grow profitably. Lack of technically qualified manpower is also a major hindrance to the foundry market and leads to poor performance and productivity.

Potential Market

Strongly growing automobile and auto components market in India has a high demand for castings. Foundry market should look to develop as a hub for this sector and leverage on it to increase production. Indian foundries should seek to expand their markets to countries with insufficient supply of casting components. Foundries should establish larger facilities and improve the quality of casting products to help develop the export market for such goods.

A Vision Plan 2020 for the foundry industry has been initiated by The Institute of Indian Foundrymen (IIF) to recommend the needed initiatives for strong growth and emerge as a leading supplier of quality castings to the global market by 2020. The plan outlay is of Rs 7.86 bn with an additional investment of Rs 5 bn through FDI's and Rs 8.48 bn through local resources. Vision plan will also help the industry to reach a level of 11.5 mn tonne per annum, take the total exports to around INR 16.4 trillion by 2020, add 23 more established clusters and contribute towards the skill upgradation and training of about 18,000 people.

For the time being, the foundry industry in India is poised for rapid growth in terms of volumes, quality, management, efficiency and cost competitiveness. Resources need to be pooled together to further the growth approach and make the casting business truly global. ■

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