Sponge Iron Industry: An Analysis

- Mainly In The Small Scale and Fragmented
- Plagues By High Raw Material Costs
- India Is Still The Global Leader
Sponge Iron Industry: An Analysis

Overview:
Sponge iron, also known as Direct Reduced Iron (DRI), is a product that is produced by subjecting iron ore to a reduction process. Direct-reduced iron has a slightly higher iron content, which often makes it better suited for use in the electric furnace route of steel making.

Recently, the bottom-line of major steel manufacturers in India has been impacted due to sharp rise in raw material prices, especially coking coal. It can be mentioned here that most Indian steel makers have no captive coking coal resources and hence end up importing it at very high prices. In electric arc furnaces, which normally use sponge iron as a metallic feed, normal thermal coal can be used instead of coking coal. So, when coking coal prices are high, many steel manufacturers use electric arc furnaces as a hedge against volatile raw material price movement.

Steel production through secondary sector has witnessed phenomenal growth in recent years. By the end of 2009-10, crude steel produced by the secondary steel units accounted for almost 53% of the total crude steel output of India.

According to Sponge Iron Manufactures Association (SIMA), Indian sponge iron industry continues to be a global leader with current production of 33.3 million tonnes (Union ministry of steel annual report for 2009-10).

But, the industry is facing several challenges — such as, rising cost of thermal coal (input for production), non availability of high grade iron ore and lack of economies of scale.

Under the current backdrop we will analyze the industry dynamics, challenges and outlook.

Production Trend:
Sponge Iron production in India witnessed a CAGR of 14.77% during the period 2004-05 to 2009-10. However, the growth rate was volatile during that period with 2006-07 recording the highest growth rate of around 38%.

Production growth is expected to accelerate during 2011-13 on account of a strong demand from the secondary steel industry, which uses sponge iron for manufacturing steel.

According to CMIE, steel production is expected to grow by 11% and 15%, respectively, during 2011-12 and 2012-13. As secondary steel sector accounts for almost 55% of the total steel production, a strong growth in production of steel is expected to boost the demand for sponge iron. Sponge iron production is expected to grow by 14% in 2011-12 and by 18.4% in 2012-13.

Pricing Scenario:
Sponge iron prices ape the trend in steel prices. Currently, sponge iron Mumbai prices are hovering around ₹18,500 per tonne.

According to CMIE, steel prices are expected to grow by 7% and 8% during 2011-12 and 2012-13 respectively. We, therefore, expect sponge iron prices to rise as well. Sponge iron prices are expected to rise by 10.1% during 2011-12.

The price movement of sponge iron is also linked to the price movement of scrap in the market. Scrap is used as a substitute for sponge iron in electric arc furnaces.

Capacity Additions:
Sponge iron companies are adding huge capacities in recent years. The installed capacity of the sponge iron sector has grown from 17.1 million tonnes in 2005-06 to 33.3 million tonnes as per SIMA.
The capacity addition is expected to gather pace in the next two years. Around 2.28 million tonnes of capacity is expected to be commissioned in 2011-12 and another 1.35 million tonnes in 2012-13. This will push up the country’s total sponge iron manufacturing capacity to 38.3 million tonnes by March 2013.

Industry Issues:

Short supply: Tight supplies of iron ore and higher prices of raw materials (coal as well as iron ore) are hurting India’s small-scale sponge iron units.

A lot of sponge iron makers are small, backyard operations. When raw material prices are higher, it hits their margin.

Although high prices seem to be an issue, shortage of iron ore still remains the main concern. The iron ore used as a raw material for sponge iron needs to be of higher quality with more than 62% Fe content. Currently, out of India’s estimated reserves of 25 billion tones of iron ore, higher grade constitutes only about 8.7%.

Wide divergence in the cost structure:
The cost structure for sponge iron players varies according to their integration levels. Sponge iron players with access to captive raw material and power have significant advantage over non-integrated players. The cost of production of a sponge iron player with no access to captive raw material is substantially higher, by almost 2.5 times compared to the cost of production of a fully integrated player.

Major Players:
The two major players include Tata Sponge Iron and Lloyds Metals and Engineers Ltd. Tata Sponge Iron is India’s largest player of sponge iron with annual production capacity of .39 million tonnes. It can mentioned here that Essar steel with installed capacity of 5 million tonnes has the largest gas based sponge iron plant in a single location in India. It is used mainly for internal consumption. Ispat industries also has a sponge iron making capacity of 1.6 million tonnes.

Outlook:
Sponge iron can be used along with normal coal in the electric arc furnace and can be used as hedge against the volatile price movement of coking coal in the international market. However, major steel makers in India still use blast furnace route for steel making. The reason being it’s difficult to achieve large scale production through electric arc furnace. Setting up of blast furnace is capital intensive, hence successful for large scale production.

Production cost in case of electric arc furnace is also directly linked to the electricity cost. Right now it’s used mainly for producing specialized steel in the small scale.

In the future, sponge iron can be used for large production only if electric arc furnace manufacturers achieve economies of scale through consolidation of small players.
Chinese Power Equipment Suppliers Score Over Indian Manufacturers

Chinese equipment suppliers pip BHEL in meeting deadline: Chinese power equipment suppliers have pipped their largest Indian counterpart, Bharat Heavy Electricals Ltd (BHEL), in meeting delivery commitments, a power ministry study shows. Foreign companies, including Shanghai Electric Corp, Donga Fang Electric, SEPCO Electric Power and Harbin, met 85% of their delivery obligations, as compared to BHEL's 51%. (The Economic Times, April 11, 2011)

- PRU analysis:

BHEL the largest power equipment manufacturer in India has been witnessing a contraction in its market share in recent past due to increased competition, especially from Chinese players. BHEL currently has a manufacturing capacity of 15GW. The company is adding 5GW to increase the total capacity to 20 GW by FY12.

It can be mentioned here that during FY10-11, Chinese manufacturers of boilers, turbines and generating equipment (BTG) managed to increase the market share due to the following reasons:

- Aggressive target increase by the Government and lack of capacity from BHEL leading to the entry of Chinese BTG/EPC players into the Indian market
- Chinese BTG players introduced 300MW, 600MW units which were cheaper on a per MW basis than BHEL
- Chinese BTG delivery time was 6-9 months lower than BHEL
- Quicker delivery, lower costs and high merchant rates meant higher RoEs for the power producers using Chinese BTG.

Most of the orders placed with Chinese BTG players have been from private/independent power producers. For Instance, Reliance Power Ltd has placed an order worth $10bn (₹44,500 crore) with Shanghai Electric Power Company of China for its coal-based power plant.

Government has been contemplating imposition of import duty on Chinese equipments in order to safeguard the domestic players. Imposition of duty however will lead to cancellation of orders from Chinese companies hence it will put the aggressive capacity addition plans at stake. Levying import duty will also result in increase of power tariff to the extent of 15-20 paise per unit.

It can be mentioned here that Central Electricity Authority (CEA) and power ministry plans to add over 1 lakh MW of power generation capacity during 12th and 13th five year plan. However, in the long run the trend might change and domestic players like BHEL and L&T might be successful in gaining their market share back.

The reasons for the same could be:

- Chinese BTG operated plants have high PLF (plant load factor) ranging from 60% to 95%. However, these PLF levels are not sustainable since these equipment are not customized to handle different coal varieties (due to supply issues from Coal India).

Note: Plant Load Factor is a measure of the average capacity utilization. It is measure of the output of the plant compared to maximum it can produce. Hence, more output with lower cost per unit.

- Chinese manufacturers don’t have considerable advantage in super critical technology. The technology has been absorbed from international players only. Recently, L&T and Mitsubishi Heavy Industries (MHI) have set up their first private sector facility with annual capacity of 6,000 MW of super critical boiler, turbine and generators by 2012.

- BHEL is planning to add 5GW capacity to its existing 15GW by March, 2012. This is likely to help the company in achieving economies of scale. Hence, this might also enable BHEL to achieve a cheaper cost per MW basis.
The Japan Collateral: Imported LNG Prices Flare Up

Imported LNG 23% dearer since Japan disaster: The ripple effects of the natural disaster that struck Japan in March are being felt in India, as prices of imported liquefied natural gas (LNG) are rising steeply, hurting local companies that use it as fuel. (Mint, April 11, 2011).

- PRU Analysis:

The tsunami and earthquake that hit Japan in early March this year has led to the shut-down of about 54 nuclear plants that provided 30% the country’s power. Japan will now have to depend more on conventional energy sources to meet this shortfall. This will drive up the demand and import of natural gas into the country.

This has resulted in a sharp rise in prices of conventional energy sources. While the price rise of Brent crude has been fairly well documented, it might be interesting to note that LNG prices have also risen to $11.47 per million mBtu, more than double the $4.75 price of imported natural gas a year ago.

In India, natural gas accounts for about 9-10% of the energy basket. The relatively low share of gas in energy consumption in this country is attributed to limited availability of natural gas.

Natural gas production, which used to be around 89 Million metric standard cubic meters per day (MMSCMD) in 2005-06, has increased to around 140 MMSCMD in 2009-10 due to incremental production from the KG-D6 basin.

However, India still remains a gas deficit country. There is still a gap between the availability and demand which is partially met through import.

This steep price rise in imported LNG has come at a time when India is facing a crunch in domestic supply.

Gas production from the gas field owned and operated by Reliance Industries Ltd (RIL) in the Krishna-Godavari (KG) basin, which should have reached 60 mmcmd by now, is only around 44 mmcmd currently.

Power and fertilizer plants consume 70% of the gas available in the country. Both these price sensitive industries will be hard hit in the current circumstances. Inadequate supply of gas forces them to operate at 50-60% of the capacity.

- This will affect the profitability of fertilizer companies as they either cut volumes or resort to purchase of gas from alternative sources at a higher cost to maintain operating rates.
- Power generators that have contracted gas supplies from RIL, especially in the southern states, are operating at a lower plant load factor (PLF) already. If they import at such high prices, it will push their cost of production and hence rendering the unit unviable in competitive bidding.
- The urea sector requires 43.14 mmcmd of gas annually, only one-third of which is supplied from RIL’s KG D6 field. This high import price will lead additional subsidy burden for the Government. The government has fixed the cost of KG D6 gas at $4.2 per mmBtu . The import price is almost more than double right now.
- The current custom duty of 5% will make it even more expensive to import.

Note: LNG is simply natural gas in liquid form. Natural gas is converted to LNG by cooling it to (-)260 degrees Fahrenheit, at which point it becomes a liquid. This process reduces the volume, hence transportation becomes easier.
IIP: Non-consumer Durables A Surprise

Feb IIP points to slowing growth for current fiscal: Industrial output growth slowed sharply in February to 3.6% from 15.1% a year ago due to poor performance of the manufacturing and mining sectors, but experts do not see any softening of the RBI’s monetary policy stance. (*The Economic Times, April 12, 2011*)

- **PRU Analysis**

The index of industrial production recorded a slow year-on-year growth of 3.6% in February. The reason for single digit growth can also be attributed to the higher base effect. Fifteen out of the seventeen industry groups registered a growth. The two laggards include ‘wood & wood products; furniture & fixtures’ and ‘machinery & equipment other than transport equipment’.

Manufacturing output, which makes up 80% of IIP, grew an annual 3.5% during the month, compared with 16.1% a year ago. Growth in mining & quarrying was also muted at 0.6%.

A look at the use-based segregation of the data shows that the slow growth was led by a contraction in capital goods output, which shrank 18.4% in February 2011, compared to growth of nearly 46.7% in the year-ago month. Insulated wires & cables and material handling equipment drove the fall in capital goods index.

It must be noted that index of consumer non-durables which has been recording a marginal growth, has been performing well during the past two months — January and February. The sectors that performed well include wheat flour (8.5%), sugar (31.4%), paper (9.6%), cotton cloth (9.4%) and groundnut oil & mustard oil.

<table>
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<tr>
<th>Use-based Growth in IIP (% Y-o-Y)</th>
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<tbody>
<tr>
<td>Feb-11</td>
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<tr>
<td>Basic Goods</td>
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<tr>
<td>Capital Goods</td>
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<td>Intermediate Goods</td>
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<tr>
<td>Consumer durables</td>
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<tr>
<td>Consumer non-durables</td>
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<td><strong>Overall</strong></td>
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Source: Mospi, Dhanbank PRU

Among the intermediate goods, yarn production (cotton and blended both) which accounts for nearly 20% of the intermediate goods segment have recorded a healthy growth during the month. Particle board and commercial plywood output receded.

Cumulative growth during April-February at 7.8% has been led by growth in consumer durables, intermediate and capital goods. Consumer non-durables recorded a sluggish growth driven by lower milk powder, vitamin A and 100% non-cotton cloth production.

The index of core sector growth — which includes crude oil, petroleum refining, coal, electricity, cement & finished steel and accounts for about 26% of the overall IIP — grew by 6.8% during February. These sectors are mainly drivers of industrial production.

**Power: Highest Capacity Addition Albeit Lower Than Target**

75,000-1,00,000 mw power generation capacity addition in 12th plan: The Central Electricity Authority today said that it expects a 75,000 to 1,00,000 mw power generation capacity addition in the 12th five year plan and majority of the addition would be from coal-based plants. (*PTI, April 11, 2011*)

- **PRU Analysis:**

The government claims that power capacity of 15,795 mw has been added in the country during the financial year 2010-11. Of this, plants of 3,635mw are yet to be syncronised. This makes the achievement rate vis-à-vis target at 57% during the year.
The prominent companies which added to the capacity include NTPC (2,490 mw) and Adani Power (1,320 mw). Nearly 42% of the 12,160 mw of capacity was added by the private sector companies.

A state-wise look at the sector reveals that Gujarat recorded maximum capacity of 1,570 mw. Of this, Adani Power contributed to 1,320 mw of coal-based power capacity. Sterlite Energy added 1,200 mw capacity in Orissa.

During the current plan period (2007-12), a capacity addition of 34,462 MW has been achieved. Assuming 16,538 mw will be added in the financial year 2011-12, the total capacity addition during 11th plan period would be 51,000 mw. This is way below target of 78,700 mw set by the government initially. This target was later revised to 62,000 mw.
• **PRU View:**

We believe that the revision in target capacity addition will make the un-achievement rate look smaller.

And unless the transmission and distribution (T&D) infrastructure improves and T&D losses reduce, our country will continue to be plagued with a high power deficit.

Note: Data on power is sourced from CEA.

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**Coffee: Getting Hotter**

**Coffee export jumps 60% to 3,25,116 tonnes:** Indian coffee export is on a high. Exports increased nearly 60% to touch 3,25,116 tonne in 2010-11. This is the highest quantity ever exported by the country. The value in dollar terms touched $811.09 million, up 83%, while in terms of rupee the value was ₹3,789 crore, a 75 % rise. *(ET Bureau, April 8, 2011)*

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• **PRU Analysis**

India exports nearly 80% of its coffee produce. Rising demand for coffee in the international market and a high coffee produce in India — up by 45.9% during October to January 2010-11 — have enabled higher coffee exports from India.

Adverse weather conditions around the Indonesian coffee plantations has lead the International Coffee Organisation (ICO) to downward revise its coffee output forecast for the crop year 2010-11 to 133.7 million bags from 134.8 million bags (Note: One bag is equal to 60 kg). Also, opening stocks of major coffee producing nations are lower than the levels prevailing in the previous years.

This is resulting in a sharp surge in coffee prices in the international market. The rise in prices started from mid-October 2010 and continued till March 2011. Since domestic prices reflect international prices, domestic prices also recorded a sharp increase. Average price of Plantation A in Bangalore rose to ₹269 per kg in March 2011 from ₹247 per kg in February. Average prices of Robusta Cherry AB also rose by ₹6 to ₹109 per kg.

• **PRU View**

We believe that rising global consumption and a restricted growth in coffee production is likely to result in firming up of the prices in the international markets. Domestically too, lower stocks are expected to restrict exports and hence the prices are likely to move further northwards.
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