

Next Boom After Sponge Iron ?

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The Indian Sponge Iron Industry has witnessed remarkable growth in the last few years in India. Even a few years back our country was ranked 3rd and today we stand as the largest producers of DRI in the world. The credit of this transformation should be given to all the consulting and technology companies, who contributed to the indigenization of the DRI technology through their vision and prudent inputs and ideas. This has played a pivotal and an instrumental role in scripting this growth story. But, having attained this mark one has to be extra vigilant and careful, as whenever the growth is unplanned, unmeasured and by all accounts exceeding expectation, there is always a possibility that this growth may be followed by setbacks and problems. Although the Industry has performed exceedingly well, yet like any other industry it is not devoid of areas which it can work and improve on. It should be our

endeavor to put in place a mechanism which could in some regard guarantee sustainable and long-term development for the industry and thereby the people involved in it.

So let us study the possible problem areas and the tribulations that may be in store for the industry. It is said accepting and cognizing the problem is a start towards the solution of any immediate or impending problem.

Major problems faced by Sponge Iron Manufacturers :

- Iron Ore with 63% Fe content if available fluctuates highly in terms of cost, irrespective of its production cost.
- Availability of Coal from the Government controlled Mines contains high level of ASH or else FC content is low.
- Low metallization of DRI is available in the market, resulting from POOR QUALITY of Iron ore, which ends up affecting the yield of liquid steel production.
- High Ash content in coal and contamination in Iron ore results in ACCRESION and low CAMPAIGN life of the kiln.
- The quantity of FINES generated in the Product during the processing (25% to 45%) affects the profit margins especially in the South.
- High volumes of Ash and Coal Char generated everyday is becoming a THREAT to the Environment. And COST of waste disposal remains high.
- High degree of FLUCTUATION in the prices of the finished product is also a worry.

The main raw material Iron Ore is required in Lumps and in sizes which ranges between 5mm to 18mm. To produce these sizes ore crushing and its screening is required. The problem that this throws up is what to do with the ore which are below the size of 5mm? Majority of the answers to these problems



lies in exporting these ore to China. But China does not import Iron ore below 60% Fe content. Another problem we have to contend with is handling the fines generated during the production process of DRI?

The solution lies in developing and adapting the most effective and relevant technology in the near future to convert all the iron ore fines available to the most convenient and usable shape or form. Nothing else has to be done apart from converting all the fines into PELLETS. Normally Iron Ore pellets can be used in Blast Furnace, DRI kiln and in an Arc Furnace. There is also good export potential for these Iron Ore pellets today.



We continue to use the same LURGI technology which has been in use for the last 20 year for producing DRI and there is no indication of that changing very soon. Today all the pelletization plants in India are operating with the same Imported Technology from too long ago. The operational plants although has an high capacity of production, there is a need for indigenization of the remaining technology along with development of newer technology to reduce the produce cost to go along with the operating capacity of the plants.

Definition and Uses of Iron Ore Pellets :



Iron Ore Pellet is a kind of agglomerated fines which has better tumbling index as compared to that of parent ore. It is being used in Blast furnaces in many countries where lump ore is not available.

In India the necessity of pelletization is realized because of many reasons and advantages. Sponge iron manufacturers suffering with the same problems are looking for the development of this technology. Major part of Steel made by Essar and Jindal uses DRI, and this DRI is produced using Pellets. Both the companies established the pelletization plants keeping the advantages in mind.

Necessity of Pelletization :

India has adequate reserves of Iron Ore, but all of them are not ideal for use directly in steel the making process. Iron Ore fines cannot be used in DRI, but once they have been converted to pellets they will provide the maximum yield. There are many reserves with Fe content less than 60%, which cannot be used with out beneficiation. After beneficiation the ore should be converted into pellets for further use and application.



When ever the mined ore is crushed for obtaining the desired sizes, lot of fines will be generated. These fines will become reusable only when they are converted to Pellets. To

curb the shortage of Iron Ore and meet the ever increasing demand for steel i.e. 100million Tons by the year 2020 as indicated by the industry experts and the Steel Ministry, Pelletization technology can only help in Indian DRI route steel manufacturing.

The steep rise in Iron ore prices, in the range of Rs.2000 to 3000Rs. per ton due to the demand from upcoming Sponge Iron plants has necessitated going in for pelletization. This gap is to be filled up by the utilization of the iron ore fines below 5mm.

Finally and most importantly it is very important to consider the ENVIRONMENTAL aspect as well. We have to utilize all the Iron Ore fines generated during mining, crushing, screening and transportation etc to keep our industrial surroundings and environment clean. So the Iron Ore Fines pelletization should be given priority by the Government as well as by the Private Industrial organizations and institutions.

How Iron Ore Pellets compare better with Iron Ore Lumps :

- Very High Tumbling Index .
- No Disintegration during handling.
- Low Abrasion Index compared to Lumps.
- Uniform in size and Shape.
- High Compression strength.
- Good Porosity.
- Cannot be contaminated with granite during transportation.

Advantages of Using Iron Ore Pellets over Crushed Iron Ore Lumps :

- There will be no losses in transportation and handling
- The same Rotary Kiln can produce 25% more DRI with out any changes in Design.
- Specific consumption of coal will come down by 10 to 20%
- Campaign life of Kiln will increase to almost 60%
- The refractory repairing cost will reduce to 50%
- Metallization will be better compared to Lump Ore
- There will be 5% fines in the finished product instead of 25 to 45% in case of lump ore.
- Raw material handling system can be simplified and cost of electricity and maintenance will be reduced by 25%
- Finally the environment will get much better to work in.

We are already working towards implementing and positively inculcating this technology. Prepare yourself to be a part of the looming pelletization boom.

