Sponge Iron Industry

An overview of problems & solutions

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Sponge Iron Industry has witnessed remarkable growth in the last few years in India. India which was ranked 3rd in the world in 2001, is the largest producer of sponge iron today. When the growth is beyond expectations, it will be followed by the problems as usual. Now, it is the time to emphasize on the problems but not on the progress.

The problems faced by the Sponge Iron manufacturers are mainly :

1. Sponge iron fines generated during process 2 to 0 affecting the profit margins mostly in south due to soft iron ore a ailable in ellary and ospet rea.
2. ow metallization of I due to poor uality of Iron ore a ailable in the market which is affecting the yield in li uid steel production.
3. igh olumes of ash and coal char generated e eryday, becoming a threat for en ironmental protection which can be controlled by Installing ower lant and ly ash brick units.
. igh olumes of iron ore fines, coal fines generated in the plant raw material handling system occupying space for which separate area should be identified and stored.
. Due to poor quality of iron ore and high ash content coal, resulting in short campaign life, which is going to affect the commercial iability.
. igh fluctuations in the finished product price, recently it had come down to e en less than s. 000 ton.
. The coal based Sponge Iron produced can not be exported due to the highly flammable nature, when the supply of I is more than demand.

The I route re uires iron ore and coal in nascent form with least beneficiation. Iron ore is a ailable in lump form with re uired sizes also, but a ailability of coal is the biggest constraint. any units are depending on Imported coal which is ery expensi e.

Definition and Uses of Pellets

Iron ore pellet is a kind of agglomerated fines which has better tumbling index as compared to that of parent ore and can be used as a substitute for the same. Iron ore pellets are being used for long in blast furnaces in many countries where lump iron ore is not a ailable.

In India, the necessity of pelletization is realized because of se eral reasons and ad antages. Sponge iron Industry which can be benefited more has started looking for use of iron ore pellets. In ssar and indal Steel is made through I route, and this I is made by using ellets for many years.

Necessity of Pelletization:

India has ade uate reser es of iron ore. ut the country has inade uate infrastructure for catering to the Iron ore demands of all the I steel plants in the country. The excessi e fines generated from the iron ore crushing units are mostly going waste.

To curb the shortage of iron ore and meet the e er increasing demand for steel i.e. 100 illion tones by 2020 as indicated by industry experts and steel inistry, elletization Technology is the only route that is gong to dominate the Indian I route of steel industry.

The steep rise in the prices of iron ore, in range of s. 2000 to 3000 per ton due to the up coming of large number of Sponge Iron plants has necessitated going for elletization Technology. This gap is proposed to be filled up by the utilization of the iron ore fines below mm which do not find the market and are being sold at a meager price of s. 0 to 00 per ton. This has led to cost effecti e utilization of iron ore fines to produce pellets to be used for sponge iron production and steel production through blast furnace route. In addition to this, there is also a large export market for pellets to hina, orea, apan etc.

Advantages of using Iron ore pellets instead of lumps

1. The rotary kiln can produce 2 more without any changes in the design
2. Specific consumption of coal will come down by 10
3. ampaign life will increase to almost 0
. s there will be no accretion and no fused lump formation, the refractory repairing cost will be reduced by 0
. etallisation will be better compared to lump ore
. There will be hardly of fines in the finished product against 3 to 0 , when produced with lump ore.
. aintenance and electricity cost will come down by 0 , as there will be no need for crushing and screening of iron ore lumps.
. There are no losses of handling iron ore, as pellets will not break during transport or handling.
. inally, we will ha e better en ironment to work.

I S Technology t. td. de eloped a technology to produce iron ore pellets from both hematite and magnetite ores a ailable in India. This technology will support for smaller capacities by using 0 Indian made e uipment. The cost of producing these pellets will be ery competiti e. ❑❑❑