Iron Ore Pelletization Trends in India – Anand V. Kulkarni, General Manager, RBSSN Ferrous Industries Pvt Ltd., Hospet (*Email: dravk1309@gmail.com*)

India has one of the richest reserves of iron ore, for augmenting steel production and to meet the future targets of 150 million tonnes of iron and steel by 2020. With the Ministry of Mines notifying threshold value cut-off grade for siliceous iron ore as 35% and for hematitic iron ore as 45%, it has become imperative to utilize the mineral resources which were discarded as sub-grade ores, in addition to old dumps of low-grade iron ores, for effective utilization. In order to improve their quality, various mineral beneficiation techniques needs to be employed to convert them as quality feed in the form of lumps, sinter and pellets for various metallurgical routes of iron and steel making. The beneficiated/value added iron ore fines need to be agglomerated for its utilization and the present capacity in the country for processing and agglomeration of beneficiated fines is inadequate.

Agglomeration of iron ore fines basically involves either sintering or pelletisation. Sintering is the agglomeration technique for the iron ore fines in the size range of -10 to +0.15 mm to produce clusters by incipient fusion at high temperature. Pelletization is the other mode of agglomeration applicable for fines below 325 mesh size. Sinters are porous and brittle, whereas, pellets are hard and compact and therefore, they can be transported over a long distance as they can withstand handling and, hence, they can be produced and sold everywhere. Pellets, therefore, play a very important role in iron making.

In India, pellets are extensively used in both gas and coal based Direct Reduced Iron (Sponge iron) units, as pellets are superior in quality and can withstand the tumbling action during the metallurgical processing leading to high productivity, due to improved permeability. The installed capacity of pelletization is around 30 million tonnes currently and capacities are likely to touch 70 million tonnes by 2015. The capital involved and operating cost of pelletization plants are high due to high energy and fuel requirements for grinding and induration and still could be justified due to high profitability. Dependency on pellets would increase further and additional volumes could be exported as the government has waived off the export duty on pellets. Therefore, pelletization is gaining its importance in the iron ore and steel industry in India. Various pellet plants existing in the country and their process technologies and also upcoming pellet plant details was discussed. The responsibility of the geologists and mineral processing engineers and metallurgists today is the issue of conservation and beneficiation followed by agglomeration of lean grade iron ores.

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