

Steel Plant wastes utilisation in Pelletisation process

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Abstract

Conversion of raw ore into finished steel in an integrated steel plant involves generation of many types of wastes at different stages of processing. This poses a great challenge in terms of handling of these material in an environment friendly and most effective manner. It is the responsibility of the industry to recycle its waste products to the extent possible and safely dispose them without causing environmental problem.

Today, technologies and processes with “zero-waste “ or “ no –waste” get maximum priority. Not only, JVSL’s 3 million tonne per annum pellet plant adopts the technology and process for zero waste, it also utilizes the metallurgical waste generated in the steel plant such as Corex sludge, BOF sludge, LD slag, limestone fines, CDP dust etc as additives to produce cost effective and quality pellets.

This paper deals with the characteristics of each of the wastes being utilised in the pelletisation process, their consumption and their effects on the process parameters.

Corex sludge, a hazardous product of Corex process has iron and carbon values, which are utilized in the pelletising process as a source of carbon and iron input. Several possibilities were investigated on the use of this thixotropic sludge as wetting agent in the pellet plant mixer. Investigations had revealed that 2 % corex sludge could be used in the pellet mix, added as slurry. Continual use of corex sludge has also resulted in reduction of gas volume per tonne of pellet produced. Similarly the CDP dust generated from the dedusting system of Corex has also been tried at the pellet plant successfully as a source of carbon.

LD slag being rich in elements like calcium, iron & manganese also find a place as an additive & has replaced of portion limestone for pellet making. This usage has resulted in lower heat input, recovery of valuable minerals and a quality pellet.

The use of BOF sludge in the pellet mix is recent and its usage has helped to attain higher burn through due to the oxidation of FeO contained in the sludge.

The on-going efforts to utilize these valuable wastes, has not only resulted in providing in a cleaner and eco -friendly environment, but has also resulted in reduction of production cost.