

Condition monitoring of stoves, furnace dome, hot blast main, Bustle main and suction ducts by thermal imaging or any other technology in BF.

About Blast Furnace Department:

The Department is engaged in production of hot metal from its three Blast Furnaces having useful volume of 3800 m³, each capable of producing 2.5 MT of hot metal per year. Most of the Hot metal is sent to SMS, remaining is sent to PCM/hot metal dump yard. Pig iron from PCM, processed iron from metal dump yard and granulated slag generated during production is sold by Marketing Dept. All furnaces are equipped with state of the art technology like Level-2 Automation, PaulWurth Top Charging system, slag granulation system; flat bed cast house, hydraulic Cast House equipment etc. Department produces most of the tap hole mass required to run furnaces.

Inside Blast Furnace, the iron ore is reduced to form hot metal and slag, which collects in the hearth. From there, Hot metal and slag is periodically tapped through tap holes. Hot metal is channeled via tilting runners into torpedo ladle cars, which carries it away. Slag is granulated in the slag granulation plant, dewatered and subsequently carried away by a conveyor to slag storage yard. The Blast Furnace top gases enter into the dust catcher for primary cleaning and then to annular scrubber for final cleaning. Cleaned BF gas is then passed through Turbine Stations (GETS/TRT) to convert the pressure energy into electrical energy. After this BF gas is diverted to mix gas lines for use as fuel throughout the plant.

Problem Description and Solution Desired:

The condition of these units of Blast Furnace can be monitored by measuring temperature of the shell. Thermal imaging can be used to see a large area of the unit at once making it convenient to monitor its condition on regular basis. Hot spots can be detected and remedial measures can be taken before it damages the shell further. The start-ups are required to implement maintenance approach that predicts health of equipment like stoves, furnace dome, and hot blast main, Bustle main and suction ducts, through the combination of technological deployments with state-of-the-art machine monitoring software. The thermal imaging can run the diagnosis test for the equipment without stopping the equipment or curtailing production.