

Heat Weight Standardization at BOF shop of SMS-2

Brief Description of the Process:

At BOF (Basic Oxygen Furnace), the input Hot Metal from BF (Blast Furnace) is treated with pure oxygen to remove unwanted elements and attain certain composition that characterizes the Composition of Steel. In the BOF process certain quantity of Hot Metal along with Ferro scrap is charged and then oxygen (99.9% pure) blown with the oxygen lance to take out the unwanted elements present in Hot Metal in the form of liquid slag and other gaseous output. Finally after addition of further desired elements corresponding to Steel Standards the processed Steel is taken out for subsequent treatment.

Problem Statement:

In this process of Oxygen Steel making, the very essential input item is BF Hot Metal for which standard / accurate weight measurement plays critical role in the process. Since with the input constituent elements of Hot Metal, the process parameters for the amount of oxygen and subsequent thermodynamic reactions are directly associated, it is very essential to correctly measure and record (as input for Mathematical Models) the actual weight of Hot Metal charged in the process.

Presently 4 point load cells (80T Capacity each that works on Strain gauge principle) are deployed in 2 (two) cranes of BOF shop. There are often variations in recorded data and transmitted data to know the actual input Hot Metal during BOF charge. Thus the variation for metallic input charge remains at ± 10 Ton which is out of relevance in present days stringent metallurgical requirements.

Expectations:

In order have a consistent process, reliable data for actual Hot Charge to the level of ± 1 Ton is required.

Benefits:

1. Substantial decrease in overall Oxygen, Aluminium and Ferro Alloy consumption will benefit the organization along with lesser exploitation of natural resources.
2. Improvement in other techno-economical parameters like refractory consumption, scope for more automation in subsequent steps and better control on steel chemistry