

Optimization of Hot Metal Charging Circuit in a Steel Melting Shop Using Industrial Engineering Techniques for Achieving Manufacturing Excellence

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Abstract : Steel forms the basis of any modern society and is essential to economic growth. India's annual crude steel production has seen a consistent increase over the past years and is poised to grow to 300 million tons per annum by 2030-31 from current level of 110-120 million tons per annum. Steel industry is highly capital-intensive industry and to remain competitive, it is imperative that it invests in operational excellence. Due to inherent nature of the industry, there is large amount of variability in its supply chain both internally and externally. Production and productivity of a steel plant is greatly affected by the bottlenecks present in material flow logistics. The internal logistics constituting of transport of liquid metal within a steel melting shop (SMS) presents an opportunity in increasing the throughput with marginal capital investment. The study was carried out at one of the SMS of an integrated steel plant located in the eastern part of India. The plant has three SMS's and the study was carried out at one of them. The objective of this study was to identify means to optimize SMS hot metal logistics through application of industrial engineering techniques. The study also covered the identification of non-value-added activities and proposed methods to eliminate the delays and improve the throughput of the SMS.

Keywords : optimization, steel making, supply chain, throughput enhancement, workforce productivity

Conference Title : ICOMIE 2019 : International Conference on Operations Management and Industrial Engineering

Conference Location : Helsinki, Finland

Conference Dates : July 18-19, 2019