

IAQ QUALITY SUSTAINABILITY AWARD 2022 - ONE-PAGE SUMMARY

The One-Page Summary should be in English and submitted as Appendix 1 to your Application. It will also be published on the IAQ Quality Sustainability Award Homepage; <http://iaqaward.com>. The length of this document must not exceed 1 page.

Project and contact details

The name of the quality sustainability project: Maximizing Re-cyclicity of Scrap in Steel Production to reduce CO2 emissions		
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Organisation(s), country, where the project-members are working, including Web-page links		

Project description

Steel Scrap can be recycled infinite number of times to produce steel with minimal carbon footprint. Globally, steel is produced through two main routes - Blast Furnace-Basic Oxygen Furnace (about 70% of production) and Electric Arc Furnace (about 30% of production). The BF-BOF route utilizes metallurgical coal to reduce iron ore to produce Hot Metal for steelmaking, which is the main reason for BF-BOF route is having high carbon emissions compared to an EAF, the latter uses higher proportion of scrap charge.

Thermodynamic balance in a BF-BOF route limits scrap recycling to a maximum 20% of the metallic charge in the BOF. Globally, steel scrap used in steel making ranges between 8 – 14% of total BOF route steel making, mainly because of scrap unavailability and higher cost.

Tata Steel Jamshedpur has been increasing its scrap charge over the years from 5.3% in FY21 to 7.6% in FY22 and the target it to use up to 15% by 2025 based on the debottlenecking of constraints in scrap sourcing, processing, scrap logistics, storage outside & inside Steel shop, loading in scrap box and finally charging in the BOF. Out of three steel melt shops the present case is of LD3 with regards to scrap storage inside Steel shop, loading in scrap box and finally charging in the BOF.

Following steps were taken:

1. Interchangeability of magnet and grab without modification was worked upon during commissioning
2. Timer-based Logic of grabbing open from scrap lift and grab open for scrap drop incorporated in the supplier scope as no provision is there for step opening.
3. Electrical Panel for Grab operation installed on Crane.
4. Upgradation of Scarp box and scarp car is done by our mechanical expert.
5. Cable reeling drum with cable replaced to suit the grab.
6. Trial Conducted

Project leverage potential

Taking into consideration, the availability of space and logistics, this technology can be horizontally deployed in other shops of Tata Steel.

- Tata Steel Jamshedpur: Under implementation in 3rd BOF in LD2 shop
- Tata Steel Jamshedpur: Under implementation in 2nd BOF in LD1 shop
- Tata Steel Kalinganagar: Planned in 1st BOF in LD shop
- TSK- 1 BOF (to be started)

Picture/Image describing the project

