

IAQ QUALITY SUSTAINABILITY AWARD 2021 - ONE-PAGE SUMMARY

Project and contact details

The name of the quality sustainability project: Sustainable Initiatives through Total Quality Management to produce Greener Steel			
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Organisation(s), country, where the project-members are working, including Web-page links			
Tubes Division, Tata Steel Limited, Jamshedpur, India			

Project description

Tata Steel has always been focused on creating a sustainable tomorrow. As a part of Tata Steel, Tubes Division has carried out various initiatives to develop sustainable products.

An internal group was formed in 2018 to take a project on DMAIC method which aimed to produce greener steel. This group analysed the entire production process and identified potential drawbacks which adversely impacted the surroundings. Using Pareto Analysis, the vital few among the noticed areas of improvement were Energy Consumption and Effluent Discharge.

After brainstorming, the team decided upon the necessary steps required to achieve Zero Effluent Discharge by FY'20 and reducing the overall power consumption of the entire plant by 10% and 5% of specific power consumption per ton production by FY'21.

During data collection, we saw that the total power consumption in FY'15-18 were 28503, 28179 and 27118, 26372 (in MWH). For the same years, the production was 258321, 265218, 267652 and 265333 (in Ton) hence the specific power consumption per ton was 110, 106, 101 and 99 (in KWH/T). On disaggregating the absolute power consumption, and monitoring them via graphs, we found that the power consumption was maximum in compressors and works lighting, 38% and 30% respectively. Analysing the existing situation, it was found, some joints in the pneumatic values had leakages, the existing compressors were not efficient compared to latest models etc. High watt lights were used for overhead lightning in plants and office buildings.

Tubes had a monthly effluent discharge of average 3300KL per months and approx. 40000KL per year, this effluent had high TDS value of thickener in overflow drain water and there was an overaccumulation of sludge in thickener. Discharge water quality of water wasn't as per environment norms so we were unable to discharge the water outside the plant premises as discharge water would disturb the reservoir water quality.

Brainstorming was done, and ideas were finalized upon and validated. These include usage of 120W LED lamp for overhead light, improving energy efficiency of compressors by undertaking various actions and many others. The team also decided to lay discharge pipes from thickener to dry bed area, add extra pumps to extract slurry, removed sludge (approx. 225m3) from thickener tank. All the jobs were done by inhouse company and contract manpower utilizing normal contract and materials were procured through procurement process of Tata Steel.

The project team managed to obtain its planned goals by respective due dates, effectively helping Tubes Division to keep its promise of a better tomorrow. These changes have helped Tubes Division to reduce the power consumption to 86.12 KWH/Ton in the current year and zero effluent discharge for the previous 2 years. The project has helped Tubes Division get the prestigious Green Pro Award.

Project leverage potential

The ideas which were the base of this project can again be used, not only within the Tube Division but also across the industry. Wherever there is utilization of compressor based technology and/or effluent treatment plant, these ideas can potentially contribute to a sustainable production. Air compressors account for significant amount of electricity used in industries which are used to supply process requirements, to operate pneumatic tools and equipment, and to meet instrumentation needs. Only 10 – 30% of energy reaches the point of end-use, remaining being converted to unusable heat energy and to a lesser extent lost in form of friction, misuse and noise. All compressors after a certain period, are unable to perform at peak efficiency, irrespective of usual repair and care. Hence our project and ideas would be helpful in preventing unnecessary waste of power. Similarly, effluent discharge can be reduced by following our ideas and help with reusing the otherwise wasted water.

Picture/Image describing the project

