



Environmental friendly consumption of scrap tires in eafs to save power and carbon

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World wastes nearly 1.3 billions of tires in a year, while Iran wastes 8 millions pieces of tire annually. This study and investigations show that waste tires can be a substitute for coal & coke in EAF in an environmental friendly way. In this study Esfahan Steel Company (ESCO) consumed waste tires with 6t capacity EAF. Thirteen grades of steel including low, medium & high C content as well as low & high alloys were produced during 73 heats. The results were very successful & coke consumption rate reduced from 18 to 0 kg/t of steel. Electricity consumption decreased from 448 to 388 KWh/t. Stack gas analysis & measuring was done and the achieved results indicate the polluted gases content such as CO, NO_x and SO₂ are much less than the limited range. Industrial tests continued in Iran Alloy Steel Co. where 20 heats were made in 40t capacity EAF with 30 MVA transformer capacities. The Results are as follow: Waste tires can be substituted for C in EAF steelmaking & the costs are lowered by 7 €/t. The use of waste tires for additional chemical energy can further decrease electric energy consumption up to 10-25%. The average S% of steel products was lower than 0.026. Environment improved by consumption of waste tires in EAF instead of burying them in landfills. The process is reliable, economic & ecological. The large sized scrap tires like grader, mining earth mover, trucks & farm tires can be charged in EAF as whole used tires. Dioxin formation peak at 200°C decreases unsymmetrical with increasing temperature. Tires virtually have no Hg.

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