

EVALUATION OF ALTERNATIVE FUELS; THE TITAN KAMARI CASE

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ABSTRACT

Cement manufacturing involves the combustion of solid fuels along with raw materials to produce clinker. Energy costs and environmental concerns have encouraged cement companies to evaluate the extent of conventional non-renewable fuels i.e. coal and petroleum coke that can be replaced by alternative fuels such as waste oils, mixtures of non-recycled plastics and paper, used tyres and biomass wastes. Following international standards and industry best practice, cement companies use alternative fuels which trend to increase in quantities but as it concerns the quality, it is more challenging.

In this paper, a comprehensive study has been performed in order to identify and determine the characteristics of alternative fuels, based on Kamari's Plant of Titan Cement Company. Specifically, three different streams were evaluated, i.e. Tyres, ASF (Alternative Solid Fuel) a petroleum residue mixed with sawdust and SRF (Solid Recovered Fuel). This paper comprises of (a) an analysis of alternative fuel types and their quality characteristics and (b) a sensitivity analysis of the impact on the clinker quality, using as parameters different percentages of substitution rates and different inherent characteristics of fuels. Optimum fuel mix in terms of clinker quality, taking into account the fuels profile and Raw Material Mix design, will be tested and discussed. The technical viability for each alternative fuel and its potential optimum dosages or bottlenecks are also discussed.

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