



# Fly Ash Case Study

## Case:

Utilisation of un-burnt pet coke ash of the thermal power plant in kiln for the manufacturing of White Cement Clinker leading to a reduction in the environmental impact.

## The boiler at Birla White TPP is designed to fire multi fuels -

1. 100% F-grade Indian coal
2. 100% Lignite
3. 80% pet coke & 20% F-grade coal

## Problem:

Rajasthan State Mines and Minerals (RSMM) stopped selling lignite due to inherent operational problems. Lignite was the most cost effective fuel for Birla White in 2008-09; and due to geographical conditions, the use of 100% F-grade coal was not economical. Hence, use of 100% pet coke for power generation was the only economical option left. However, due to design constraints, the existing TPP boiler would require a considerable amount of modifications to fire 100% pet coke. Another problem was to reduce un-burnt carbon in the ash to sustain the boiler efficiency. Besides all these technical hiccups, the major concern of worry was the disposal of 20 - 30 MT/Day of un-burnt carbon ash of high heat value (CV of 4000 to 6000 Kcal/Kg fuel) generated through the boiler, as this would lead to a great environmental impact and safety concern.

Various options were taken into account to meet the above challenges. One was to re-circulate generated ash from pet coke in the boiler itself to reduce the amount of un-burnt carbon. However, this would not be an effective solution because of the boiler design constraints. Birla White tried to sell high CV ash to other plants/group units/industries for further usage as fuel, but no one was interested. Dumping of pet coke ash at the company land was not given a single thought as this was against our values and our commitment towards betterment of our stakeholders involved and the society at large. The only option left was to use the pet coke ash generated as fuel, due to its high calorific value.

## Solution:

Various technical issues were taken care of after continuous trials and processes were optimised. Fuel dressing was done as per the requirements, operational philosophies were modified and additional equipments were installed.

## Result:

1. Reduced CO<sub>2</sub> emission level to the tune of 13457 tCO<sub>2</sub> p.a. on account of using ash in calciner kilns
2. Increased pet coke mill production
3. Reduced power consumption of pet coke mill by 6.96 kWh/MT
4. Increased whiteness of clinker by approx. 1.0 on the Hunter Whiteness scale

