

## THERMACT

### Introduction

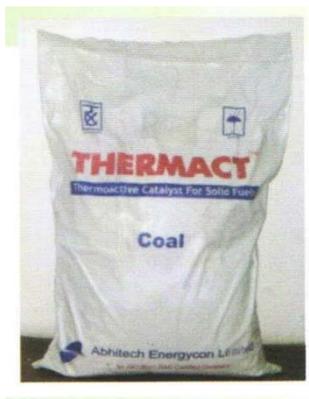
Cost of fuel in power sector forms the major part of the total production cost of electricity. With the continued escalation in the price of coal and petroleum fuels, the generation cost of electricity has been going upward.

The need of the hour is to reduce the fuel input cost as well as the emission levels by increasing the operational efficiency.

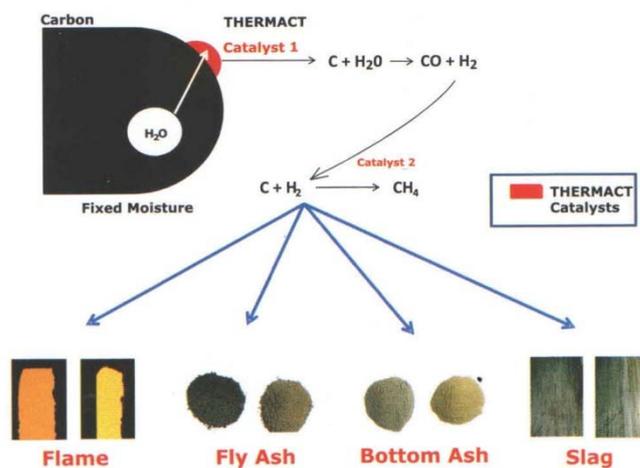
“THERMACT”, a multifunctional solid combustion catalyst, developed by IIT, Bombay, is a product which meets the above need.

### What is THERMACT?

- THERMACT, is a multifunctional combustion catalyst, specially developed & formulated to improve the combustion of coal which is used as a primary fuel in all types of boilers.
- It also reduces the problems related to combustion and its associated costs of energy generation.
- It contains proprietary combustion catalyst which helps in complete combustion of coal.



### Working Principle of THERMACT



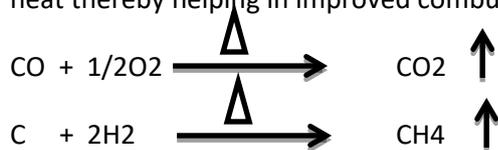
Coal, in pulverized form, is fed into the combustion chamber of the boiler. This coal contains structural (inherent) moisture to the extent of 2 to 8%. In the combustion zone, this structural moisture is converted to superheated steam, which leaves the chimney resulting into sensible and latent heat loss.



The proprietary catalyst in THERMACT facilitates reaction between inherent moisture (H<sub>2</sub>O) and Carbon to form syngas, which is a mixture of Carbon Monoxide and Hydrogen.



This combustible Syngas (CO & H<sub>2</sub>) undergoes subsequent oxidation to generate heat. The Hydrogen present in Syngas combines with Carbon of coal to produce Methane, which on oxidation generates heat thereby helping in improved combustion.



Hence, due to THERMACT, the heat loss due to inherent moisture in coal is not only minimized but also utilized to generate combustible by-products in the combustion chamber. As a result, there is an increase in the heat generation in the system which can be utilized productively.

### **BENEFITS OF THERMACT**

- 1) Reduction in Gross Unit Heat Rate.
- 2) Reduction in Coal Consumption.
- 3) Reduction in Slag and Clinker formation.
- 4) Reduction in unburnt in Fly Ash & Bottom Ash.
- 5) Reduction in Secondary Fuel Consumption.
- 6) More stable Operation of boilers.
- 7) Improvement in Generation.
- 8) Reduction in Emissions.

### **EVALUATION PROCEDURE**

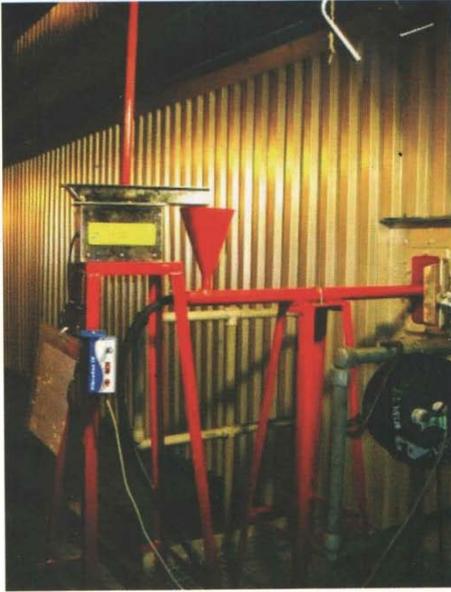
An initial study (without THERMACT) is conducted for a period of 7 to 15 days, in which various parameters of the boiler are noted and specific performance criteria is determined. After the completion of pre-trial, the readings are authenticated by the plant officials, and then THERMACT is dosed for a period of 30 to 60 days. Same parameters that were monitored during pre trial are monitored again. Other qualitative observations are also noted.

The reduction in Gross Unit Heat Rate (GUHR) and improvement in other operational parameters is compared against the performance criteria noted during pre trial.

Based on the reduction in GUHR and other improvements, the cost benefit analysis or economics of use of THERMACT is determined.

Necessary technical services to carry out the above evaluation are provided by us.

## DOSING OF THERMACT



No shutdown required for installation of Dosing Equipment.

**Dosage :**  
**1 kg of THERMACT**  
**for 15 Tons of Coal**

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