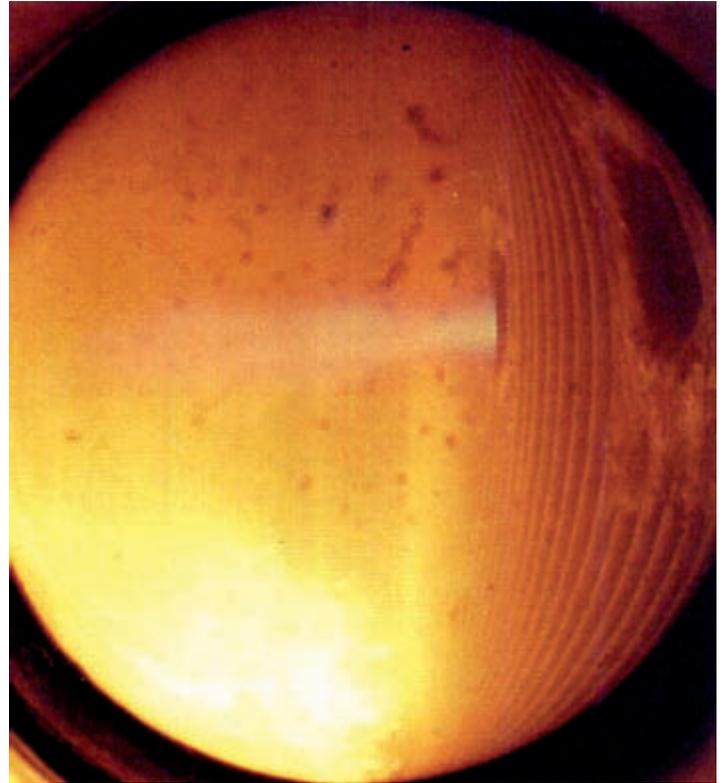


# ASIA COAL CATALYST COMPANY

## Coal Catalyst CC-88:

- Conserves Fuel Resources;
- Helps Clean the Environment;
- Improves Energy Efficiency.



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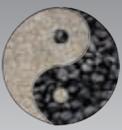
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**“CC-88: HELPING TO GREEN THE WORLD”**





# ASIA COAL CATALYST COMPANY

## BENEFITS OF USING COAL CATALYST CC-88

- Fuel Savings by Increased Boiler Efficiency and Lower Ignition Temperatures
- Reduces Carbon Particulate Emissions Equals Lower Opacity
- Cleaner Operating Furnaces/Boilers
- Improved Electrostatic Precipitator Performance
- Lower Maintenance Costs
- Lower Outage Duration and Frequency Equals Lower Purchased Power Costs
- Reduced NO<sub>x</sub> Emissions
- Reduced CO<sub>2</sub> Emissions
- Reduced SO<sub>x</sub> Emissions
- Reduced Internal Acid Corrosion
- CC-88 is Guaranteed by Asia Coal Catalyst Company to in no way cause a chimney or stack fire, or do any damage whatsoever to boilers.

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CC-88 is a dry powder available in 1 tonne supersacks

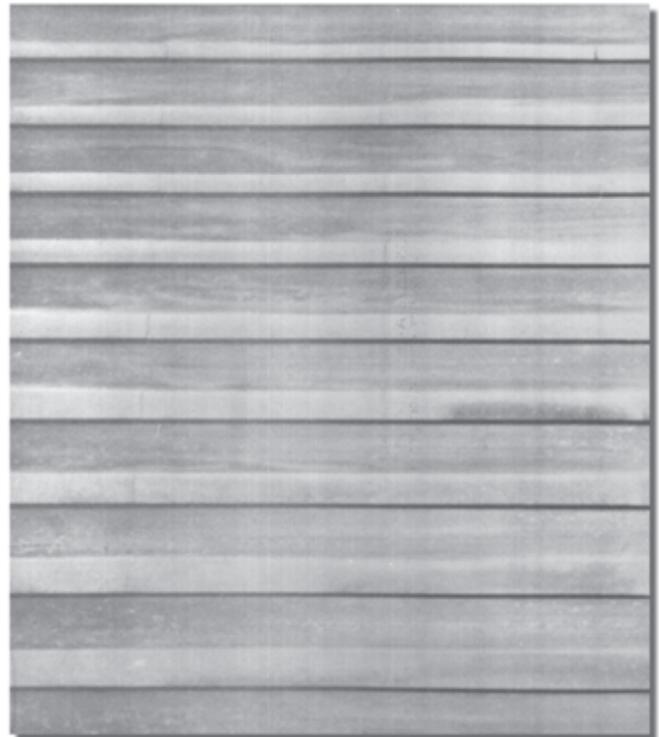
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Before



Side Wall of Boiler Before Using CC-88

After



Side Wall of Boiler 90-Days After Start of Daily Use of CC-88

# HOW COAL CATALYST CC-88 WORKS

In Chemistry Catalysts Speed Up Chemical Reactions. CC-88 works in the same way. CC-88 is a Combustion Catalyst. During the coal combustion process the oxidizing properties in CC-88 promote the increased movement of free radicals. CC-88 helps to promote the physical and chemical reactions that occur during combustion. CC-88 speeds up propagation and movement of free radicals. This releases more oxygen to the carbon contained in the coal, and at lower temperatures than normal combustion temperatures. The net effect is to add nothing to the carbon oxygen chemistry, just to speed it up.

CC-88 speeds oxidation, helping to eliminate incomplete and inefficient combustion. CC-88 turns more of the available carbon contained in any fuel into valuable and usable heat energy.

CC-88 allows the carbon molecules contained in coal to better use oxygen during the combustion exothermic reaction. CC-88 allows oxygen molecules to attach to the carbon molecules much faster, at lower temperatures, and more easily than during normal combustion conditions (without CC-88). CC-88 lowers the fuel's ignition temperature, burning fuel with less effort and more thoroughly.

The net effect is to add nothing to the carbon-oxygen chemistry, other than to speed up the process. CC-88 speeds up fuel combustion oxidation.

CC-88 reacts with the carbon / oxygen at temperatures as low as 600°F (315°C). As a result cold-end soot and carbon waste deposits are consumed when using CC-88; meaning "lost" fuel is now converted into usable heat. Burning up the carbon waste also helps keep heat-transfer surfaces cleaner resulting in improved boiler equipment performance that saves even more fuel.

CC-88 catalyst provides the following benefits:

- CC-88 will reduce capital costs for the technology needed to make existing boiler equipment comply with new environmental legislation.
- Shorten lead-time for implementation of retrofits that are required to reduce sulfur dioxide emissions if high sulfur coal is utilized.
- Broaden the range of applications for control of sulfur in old and new boiler units. The application of the CC-88 technology will permit older boilers to be retrofitted to permit the continued use of high sulfur coal.
- Increase utilization of higher sulfur coals with no increase in pollution levels. This will eliminate some of the added expense for transporting beneficiated coal, and help make the use of high sulfur coal cost-effective.
- Saves money by increasing boiler efficiency.
- As an emission-control media, CC-88 offers unique benefits both in sulfur dioxide reduction and in particulate emission reduction. CC-88 effectively reduces carbon carry-over and fly-ash seeding. Particulate emissions are thus reduced.
- Initially, particulate emissions increase when CC-88 is used because of the slag removal action of the catalyst. Once the system stabilizes, however, particulate emissions level out. Qualitative assessments verify this benefit.
- Tests undertaken in the past have demonstrated SO<sub>2</sub> removal of 30% - 60% and higher percentages can be accomplished with CC-88 feed rates of 0.0% to 1.5% of the coal feed rate.
- CC-88 is a basic, or anti-acid compound that has a neutralizing effect on the normal acid chemistry of the boiler. It slows down acid corrosion within the boiler and extends tube and heat-transfer life including the air preheater.

## Coal Catalyst CC-88 Definitions:

### What is Combustion?

Combustion is a Complex Sequence of Exothermic Chemical Reactions Between Fuel and Oxygen Resulting in Production of Heat Energy.

### What is a Catalyst?

A Catalyst is a compound or element that can increase the rate of a chemical reaction. Catalysts can lower activation energy of a reaction to help a reaction proceed faster and with less energy.

### What are Free Radicals?

Free Radicals are molecules with unpaired electrons on an otherwise open shell configuration. Free Radicals always take part in chemical reactions. Movement of Free Radicals plays an important role in Combustion.

## COAL CATALYST CC-88

IS A GOOD INVESTMENT FOR FUEL SAVINGS + AIR POLLUTION  
REDUCTION

# ASIA COAL CATALYST COMPANY

## SALES SUPPORT:

Technical Evaluations

Equipment Specifications

Easy Retrofitting of  
Existing Boilers

Start-Up Services

System Monitoring and Evaluation

Boiler Evaluation Survey Questionnaire Available  
Upon Request

USERS: For Utility Boilers, Process Heating, Municipal  
Boilers, Briquetting and Coal Beneficiation



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