



## Cleaner Coal Technology For Industrial Boiler Market. Clean Coal Using Coal Chemical Catalyst

Clean coal technology is the energy future for China, India, Asia and much of the world. Clean coal is costly and high-tech. Billions of dollars are spent developing and implementing CCT programs. Clean coal can be made affordable for the masses.

Not all clean coal technology costs billions of dollars and years to implement. Clean Coal Technology runs the range of carbon sequestration and storage to coal washing and drying. Clean coal does not have to cost billions of dollars.

Of all the most sophisticated clean coal technology available today, most are extremely costly and not within financial reach of most of the world's industrial users.

When coal burns carbon dioxide and other emissions come out the smoke stack as flue gas. The opacity of the plume of a smoke stack says a lot about how clean the plant is burning its coal. Many different types of clean coal technology are used to reduce the black smoke coming from smoke stacks polluting air with carbon monoxide, suspended particulate matter, oxides of nitrogen / sulfur and even mercury and carcinogens.

Some clean coal technologies focus on cleaning the coal before

its burned. One type of clean coal is coal washing. Coal washers wash unwanted minerals by mixing crushed coal with water and allowing the impurities to separate and settle.

Pollution control systems help optimize the amount oxygen fed to the burners inside boilers to minimize emissions of sulfur dioxide, nitrogen oxides and particulate matter. Dry Scrubbers and Wet scrubbers are types of flue gas desulfurization systems that remove SO<sub>2</sub> and SO<sub>3</sub> which cause acid rain.

Low-NO<sub>x</sub> (nitrogen oxide) burners reduce the creation of nitrogen oxides, a cause of ground-level ozone, by restricting oxygen and manipulating the combustion process.

Electrostatic precipitators remove particulate by charging particles with an electrical field and then capturing them on metallic collection plates.

Coal Gasification avoids burning





coal at all. Integrated Coal gasification combined cycle (IGCC) systems use steam, hot pressurized air and oxygen combined with coal in a reaction that forces the carbon molecules apart resulting in a syngas. Syngas is a mixture of carbon monoxide and hydrogen is pumped up and cleaned than burned in a gas turbine to make electricity.

Carbon capture and storage (CCS), also known as carbon capture is a means of capturing all the carbon dioxide (CO<sub>2</sub>) from large power plants and storing it .

Energy experts recognize and agree that the world will continue burning coal for the indefinite future, most agree at least another sixty years. Therefore the big challenge is to burn coal in a much less harmful way and make clean coal affordable to the masses, particularly the coal users burning it in the small inefficient industrial boilers.

Everyone will likely agree that coal is amongst the dirtiest of all fossil fuels. When coal is burned, it produces a lot of harmful emissions that pollute our environment, creating acid rain, polluting water and contributing

to health problems.

At the same time energy is needed and coal is abundant and cheap. The world must strike a balance to use coal responsibly. Using coal responsibly means that those that can afford clean coal technology should be made to implement every measure to protect the environment and peoples health in the surrounding communities. The huge challenge is that many coal users cannot afford or refuse to use even the most rudimentary clean coal technology because it is too costly.

There are numerous types of boilers where coal is burned huge differences between how a large utility burns coal and how a small industrial boiler burns coal. China, India and the rest of Asia are growing exponentially. Each country is rapidly increasing their electric power capacity. Most of the newest utility boilers are sophisticated less polluting fluidized bed construction. However the industrial boilers in Asia are another story.

Many of Asia industrial boiler systems are 5 - 50 MW units burning raw coal. the IB industrial boilers units burning Indonesian coal are often inhibited by slagging





and fouling. As hard carbon deposits on the inside of a boiler the slag inhibits heat transfer, which reduces fuel efficiency.

CC-88 works to soften existing hard carbon deposits and help prevent new slag formation. As CC-88 Combustion Catalyst works its way through the boiler system it will help combust wasted carbon fuel that is collecting in the cold end of the boiler. As the cold end soot deposits, soot blowers and other slag removal devices removed remaining soot more thoroughly and efficiently, this also lowers the load on pollution control devices (electrostatic precipitators)

CC-88 will reduce fuel consumption by as much as 5% - 15% percent depending on the type of boiler, the boiler efficiency, the type of coal burned and the thermodynamics of the system.

CC-88 is designed to pay for itself through fuel savings and by helping to significantly reduce costs of boiler maintenance. Poor performing boilers are subjected to unscheduled shutdowns for removal of slag and due to fouling; sometimes resulting in costly equipment repairs.

CC-88 Combustion Catalyst dramatically improves boiler efficiency by optimizing combustion conditions and improving boiler heat transfer. Return on users investment is achieved by utilizing all available carbon in the fuel, improving equipment performance and lowering operating costs.

How does Coal Catalyst work?  
Coal Catalyst CC-88 accelerates the oxidation-

reaction of carbon to produce more heat per unit time. Coal Catalyst CC-88 Oxidizes carbon at temperatures lower than normal ignition temperatures, this speeds combustion and thereby reduces carbon and slag deposits in the colder regions of the boiler.

Improving coal combustion efficiencies through a simple and cost effective means such as our Coal Catalyst CC-88 will help conserve valuable fuel resources.

Coal Catalyst CC-88 helps China's is directed towards the hundreds of thousands of inefficient older small and medium sized boilers to run more efficiently and to reduce their pollution.

Asia has a large system of coal fired





**ASIA COAL  
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CC-88: Helping To Green The World

boilers under 100 MWe in size that are currently operating at fairly low combustion efficiencies and have slagging and fouling problems. Both of these problems cause excess amounts of pollution to be emitted into the atmosphere and consume greater quantities of coal than is necessary. With the use of our CC-88 Coal Catalyst, more efficient boilers can be obtained and lower levels of pollution can be achieved.

For more information please visit:  
<http://www.cleancoal.pro>

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ACCC offers our combustion enhancement products to operators of coal-fired boiler worldwide as a practical and economical solution to balance burning coal with environmental restrictions. Our products reduce coal consumption and pollution.

