Case Studies ACF C MIX

AA JINTEC

THE NEXT-GENERATION OF **COAL** ADDITIVES THAT
REDUCES **COAL** CONSUMPTION AND EMISSIONS

NANO-CATALYTIC COMBUSTION ADDITIVE FOR COAL

Comparison of Major Products Worldwide

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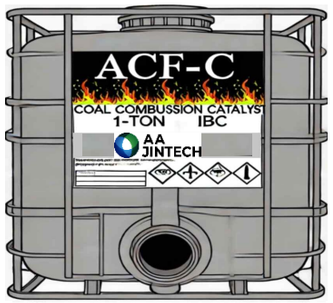
3rd Generation

Coal Catalyst Appears

Existing second-generation coal combustion catalysts had low combustion efficiency and could not be removed effectively by clinker.



3rd Gen

Nano type

Negative – Acid

1st Generation
USA
Sodium Type
Strong Alkali

2nd Generation
JAPAN
Amine Type
Alkali

Problem

- The adverse effects of combustion efficiency during long-term use
- Deformation to Clinker Rigid Foam – difficult to remove

Problem

- Problems with long term storage
- No combustion effects
- Effect of removing Clinker is weak

Advantages

- Possessing more than 20 catalyst technologies for coal
- Increased combustion efficiency
- Slagging, fouling, removing and preventing clinker
- Reduce Smog, Nox and Sox
- No Storage issues
- Significantly reducing environmental pollutants
- High-temperature corrosion reduction

ACF-C

Raw Materials

Nano-oxides
Organic matter
Carbohydrates
Enzymes

Shape

Liquid Specific gravity >1

Advantages

✓ Increase combustion efficiency
✓ Remove and prevent clinker
✓ Suppresses toxic gas generation
✓ Prevents high temperature corrosion

How to use

Sprayed onto the coal whilst travelling on the feeder conveyor belt

AAJ C-MIX

Safety	• Non-combustible materials and safe for use • Safe for use in iron or similar materials
Specific gravity	• Heavier than water (1.14 ± 0.05) • Neutral (pH 6-8 ± 0.5)
Freezing point oxidation power	• Freezing point -10°C • Excellent for preventing iron oxidation
Shape	• Colourless • Liquid at room temperature
Characteristics	• Liquid and easily absorbed by coal at room temperature • Surface modification after reaction with coal at 1,100°C or higher • Separated from other substances after combustion to prevent petrification in the boiler
Low temperature combustion characteristic	• Produces a large amount of oxygen at 380-450°C or higher to promote combustion

AAJ C-MIX

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Development of Non-Hazardous and Non-Flammable Additives in Equipment

Application Technology	Effects	Applicable Field
Micro-Compounding Manufacturing Technology at High Temperature	Combustion Catalyst, Sulphur Oxide Removal, Nitrogen Oxide Removal, Fouling, Slag and Clinker Removal Agents	RDF/RPF, Low-Grade Coal, Biomass (mixed), Kiln

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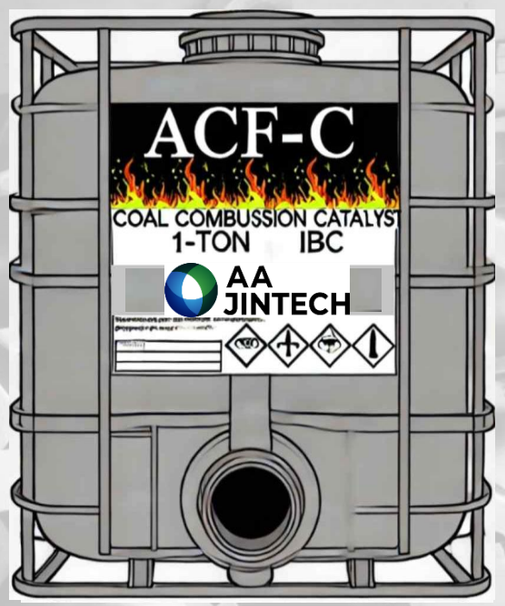
Exceptional Performance



Reduction	U.S. Company	Japan Company	AAJ C-Mix
SOx	10-20%	10-15%	75-85%
NOx	5-10%	10-15%	75-85%
CO Gas	20-30%	20-30%	85-90%
HC	10-20%	15-25%	80-90%

First Field Test - 1

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Parameter	Designation	No.4 Operation Period of Boiler		Average (%)
		18.11.16-20 Without Additives	18.11.21-23 With Additives	
Boiler Average Load	DPE	46.4t/h	44.8	-3.5
Grinder "B"	R90 "MB"	26.40%	25.1	-4.7
	R200 "MB"	3.2	4.3	33.6
Grinder "A"	R90 "MA"	11.90%	9.2	-22.1
	R200 "MA"	1	0.7	-33
Coal Humidity	WP	8.70%	8.2	-5.6
Coal Ash	AP	19.30%	19.8	2.9
Flammable Substance Content in Ash	Gong	15.30%	12.3	-19.30%

Parameter	Designation	No.2 Operation Period of Boiler		Average (%)
		18.11.16-20 Without Additives	18.11.21-23 With Additives	
Boiler Average Load	DPE	39.7t/h	31.8	3.6
Grinder "B"	R90 "MB"	11.10%	10.6	-4.8
	R200 "MB"	1.2	1.3	1.4
Grinder "A"	R90 "MA"	8.20%	8.3	1.8
	R200 "MA"	1.2	1.1	-10.5
Coal Humidity	WP	8.70%	8.8	2.1
Coal Ash	AP	19.30%	19.8	2.9
Flammable Substance Content in Ash	Gong	14.70%	11.5	-21.80%

First Field Test - 2

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The Highest Efficiency in Coal Burning

Grade	Applicable Field	Effects
ACF-C	Removing Clinkers	Increasing Heat Efficiency
ACF-CI	Coal Burning Catalyst	Improved Combustion
ACF-CW	Coat + Biomass Mixed	Slagging, Fouling Removal
ACF-SNX	Remove SOx	Reducing Air Pollution Emissions
ACF-NSX	Remove NOx	Reducing Air Pollution Emissions

First Field Test - 3

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Effect on the pipe surface

Before side pipe

After side pipe

Before ceiling pipe

After ceiling pipe

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Effect on Slag

The Difference in Particle Thickness

Before Slag

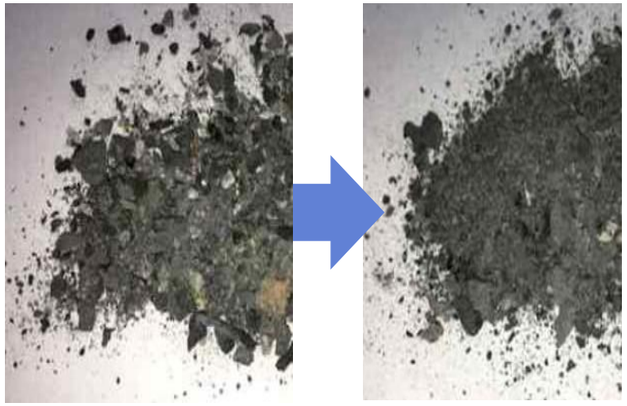
After Slag

First Field Test - 5

Second Test

Used regular coal

(Moscow Military Unit)2017.2~3



- 12.4% reduction in coal use
- Change in the structure of ash (from a large mass to a very small mass)

Third Test

Used pulverized coal

(Nobokuznetsk power plant) 2018.10~11

- 19.3% (No.4) – 22% (No.2) reduction in combustible substances among undissolved non-oxidized substances
- Increase boiler total efficiency by 1.75% (abs.) (including mechanical heat loss and heat loss due to exhaust gasses)

Fly Ash Size Reduction

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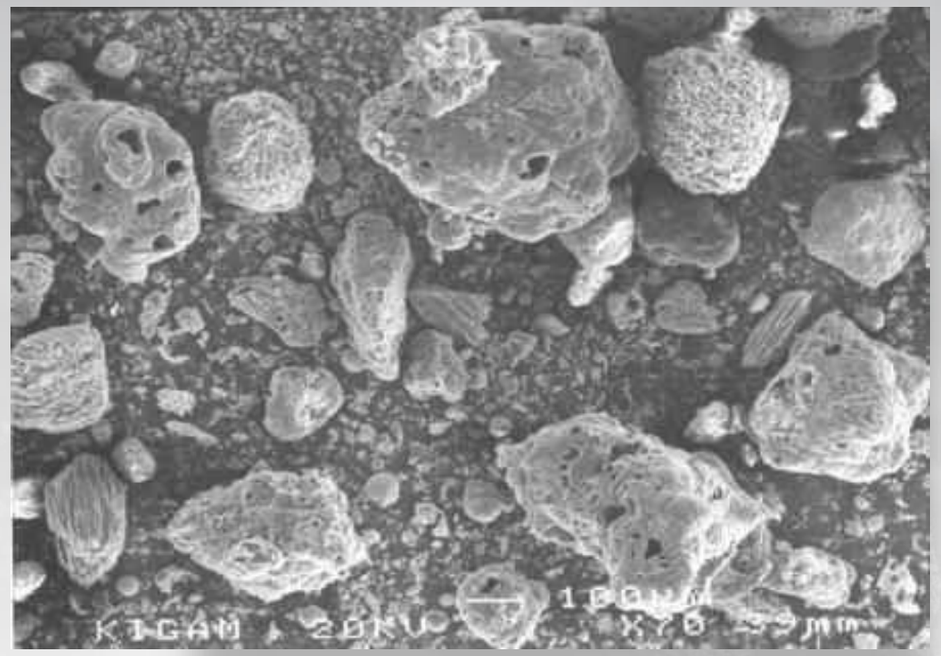
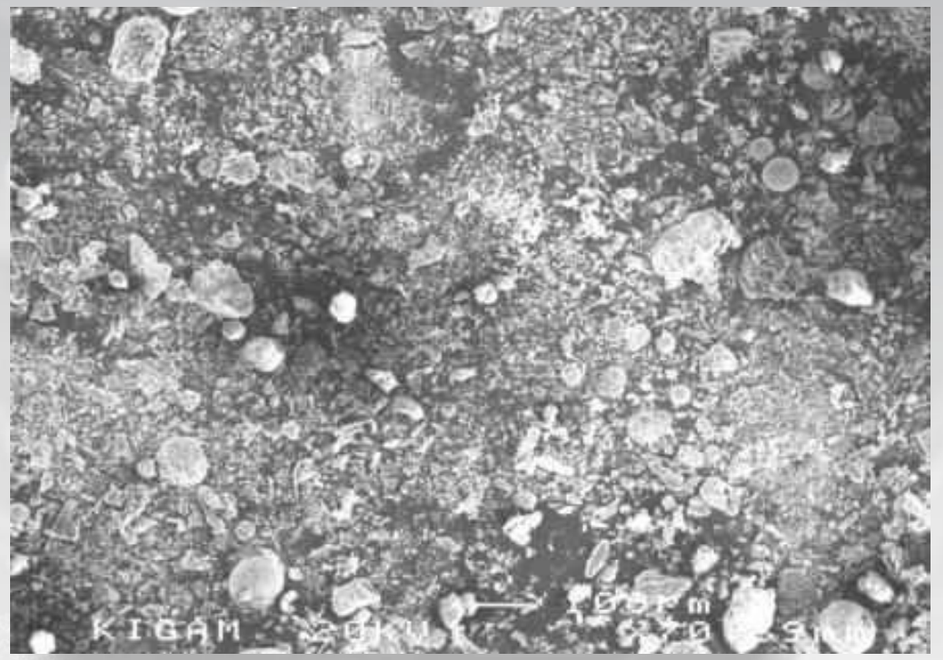


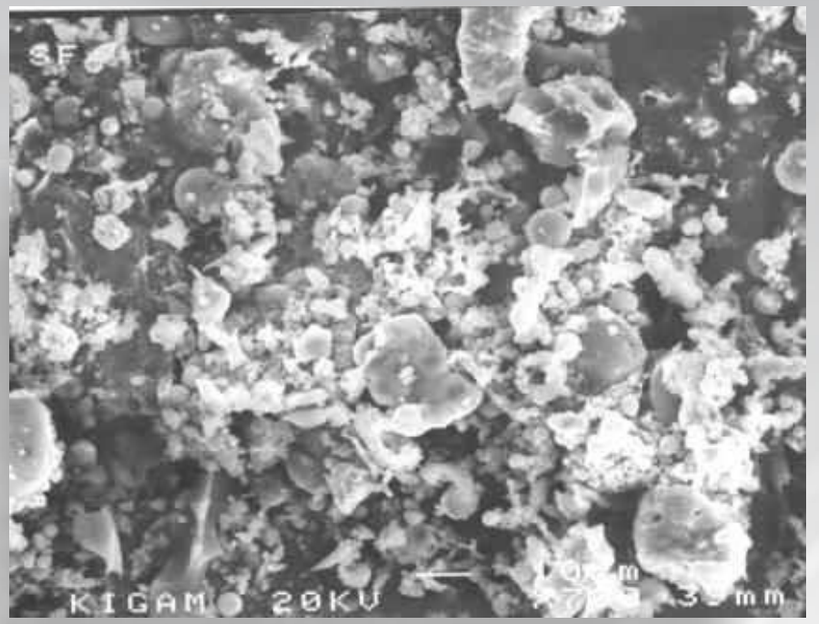
Before



After

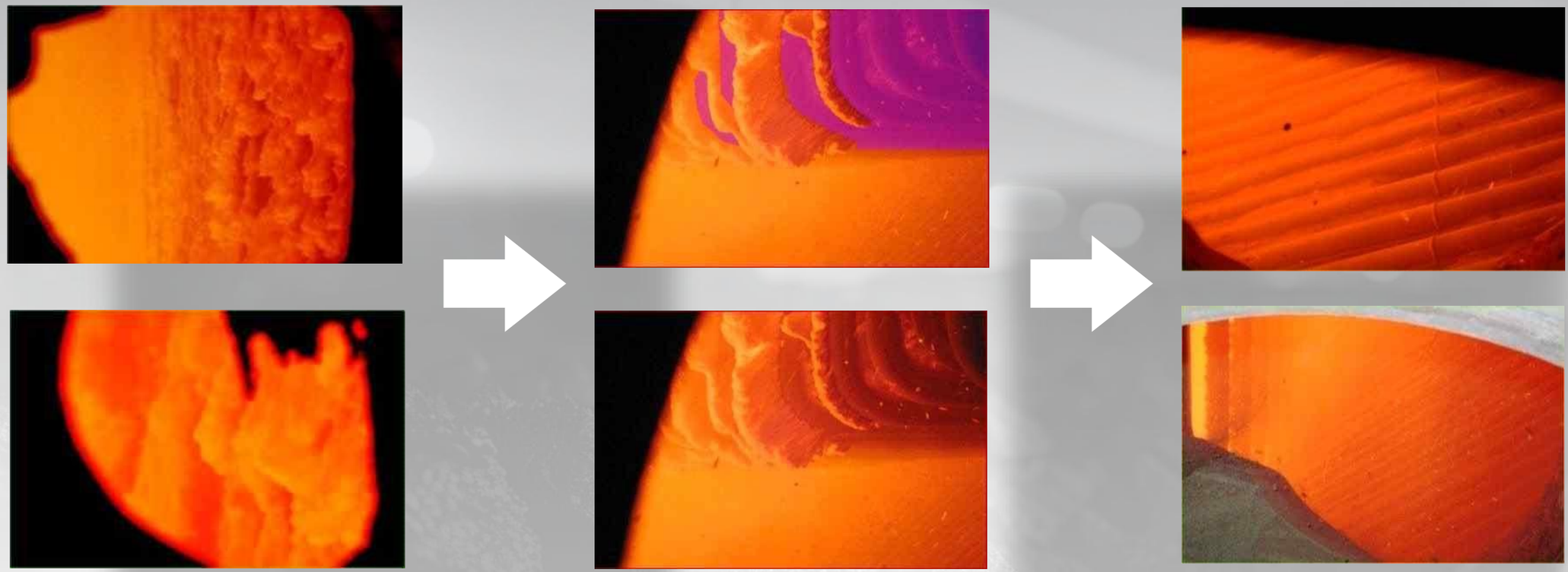
Fly Ash Size Reduction

Before



After

Clinker Removal



Before

In 7-15 days

In 30 – 40 days

Second Field Test

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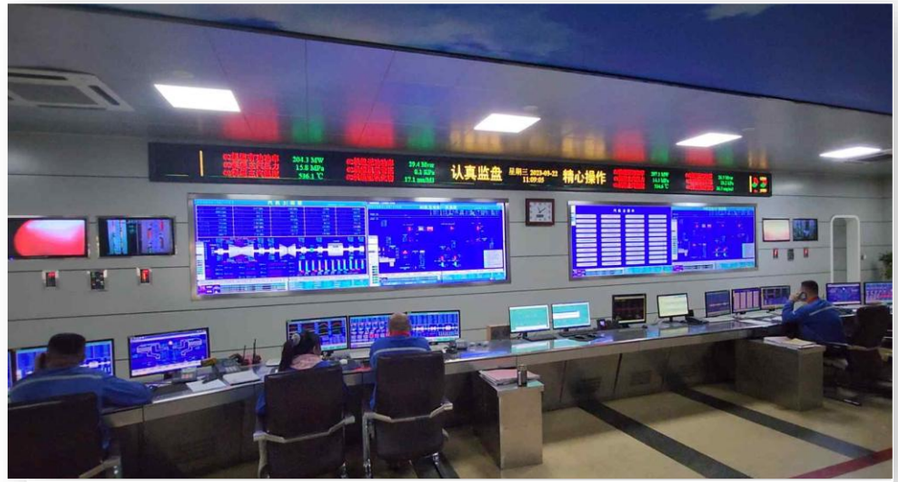
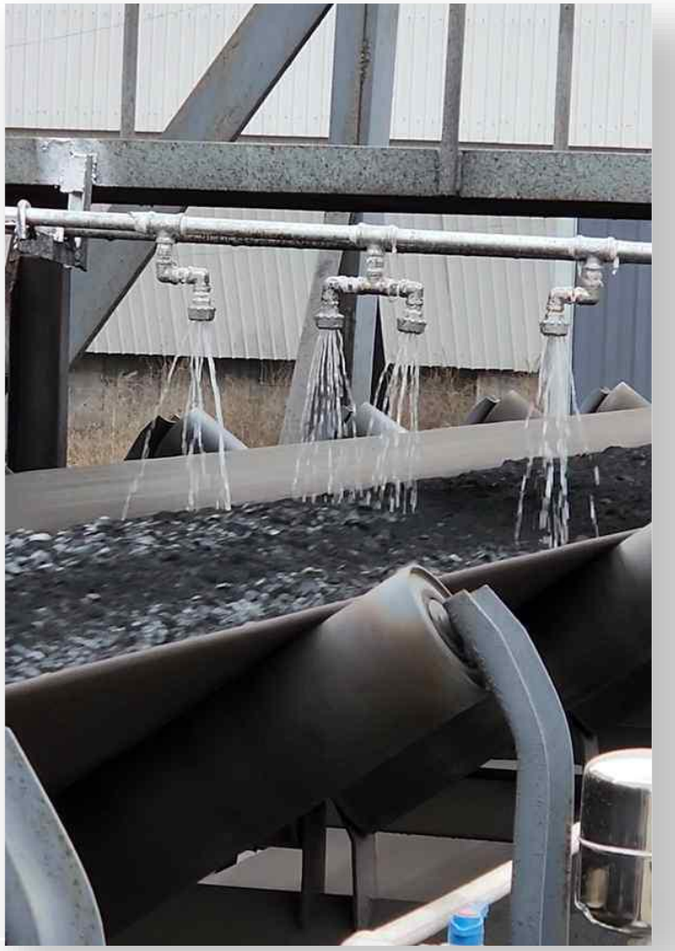
Demonstration Experiment of Thermal Power Plant



Control room of a thermal power plant



The process of spraying a catalyst into coal

Factory Chimney Smoke Change After Addition of Catalyst

Second Field Test Performance

Fly Ash Changed

Coal Chute (SK Chemical)

Before using AAJ C-MIX

After using AAJ C-MIX

Before using AAJ C-MIX

After using AAJ C-MIX

Second Field Test Results - 1

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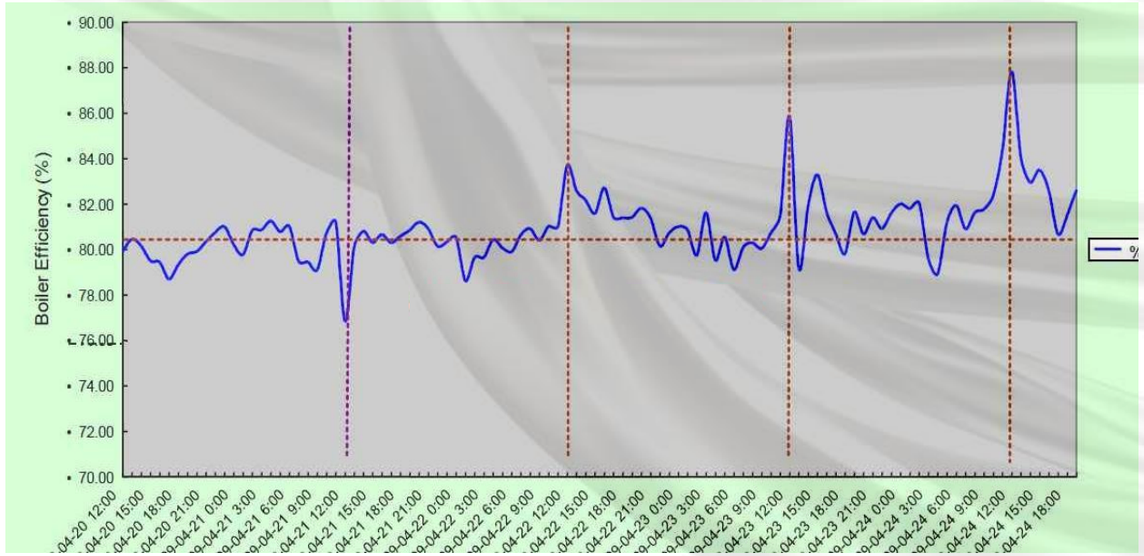
Overall Boiler Efficiency and Environmental Improvement

Boiler Effeciency Up (Dry Basis)

Efficiency Going-Up (500 MWh of Sub-Bituminous Coal Fired Boiler during 4 days / 3 times by 2 hours load Limited)



Boiler (200 tons/hr. purchased at 89 degrees) / Chinese xianhua coal, based on 80% load

Divison		Before Using ACF-C	After Using ACF-C	Remarks
Air Flow IPAI (Nm3 / Sec)		33-34	30	Reduce coal size and promote combustion
Bed Temp (°C)		850	820	Thin combustion, improvement of heat transfer removal of clinkers etc
Flue Gas	SOx (ppm)	150	110	Air volume, low temperature combustion etc
	NOx (ppm)	110	86	Air volume, low temperature combustion etc
	Dust (mg/ Nm3)	6	5	Complete combustion induction
Usage Coalition/Month		14430	14033	Changes in coal moisture content

- Also read Indonesia's latest 90's Cargo load Driving Experiment Successful
- A decrease from an average of approximately 25 days per year to an average of 7 days per year and 6 months after ACF-C is used
- Currently, the decrease in water purification period alone results in profits excluding drug costs

Second Field Test Results - 2

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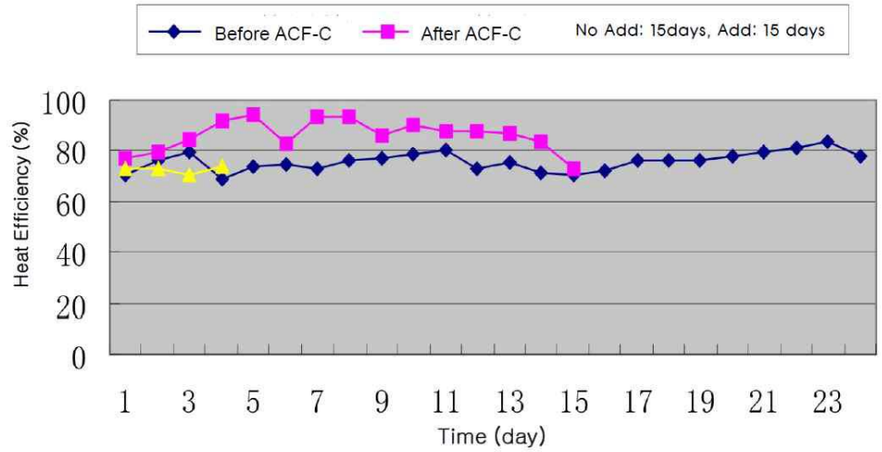
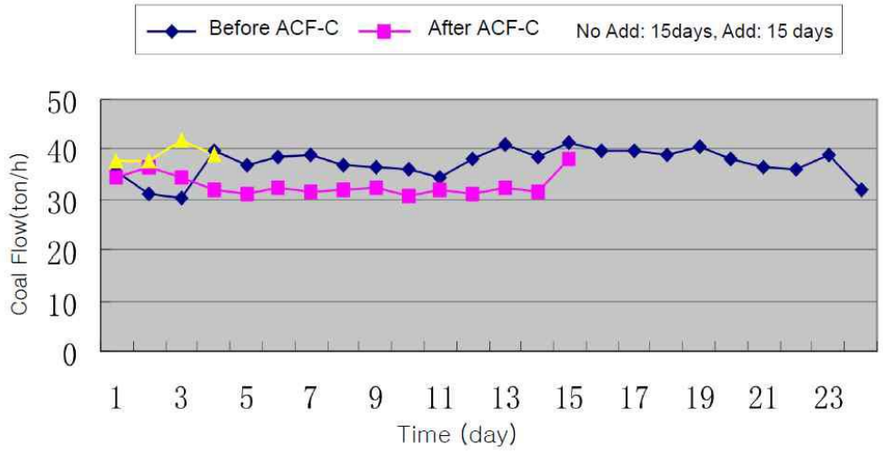
Coal Consumption Down

Before and After ACF-C Mix



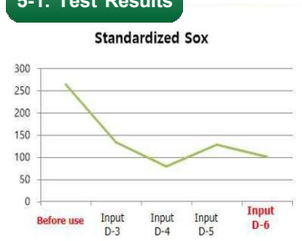
Boiler Efficiency Up

Before and After ACF-C Mix



Energy Saving and Emissions Reduction Test Report

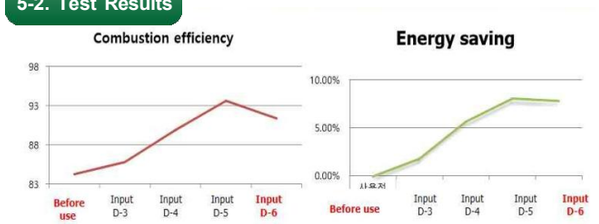
5-1. Test Results



Test tem	Before use	Input D-3	Input D-4	Input D-5	Input D-6	Average after input
Standardized Sox	264	134	80	129	101	111
Standardized CO	842	146	153	109	123	133

Energy Saving 5.87% ↑ Combustion efficiency 7.90% ↑

5-2. Test Results



Test tem	Before use	Input D-3	Input D-4	Input D-5	Input D-6	Average after input
Air ratio	3.31	2.86	1.91	1.32	1.38	1.87
Energy efficiency	-	1.84%	5.69%	8.09%	7.84%	5.87
Combustion efficiency	84.47	86.21	90.82	95.02	92.49	91.13
	-	2.07%	7.52%	12.50%	9.50%	7.90

SOX Reduction 58% ↓ CO Decrease 84% ↓

First Test (2015y)	**Coal consumption reduced by 14.6%. Boiler efficiency improved by 75%**
Second Test (2017y)	**Coal consumption reduced by 12.4% over multiple days**
Third Test (2018y)	**Unburned components decreased by 19.3-22%. Boiler efficiency increased by 1.75%**

Third Field Test Results

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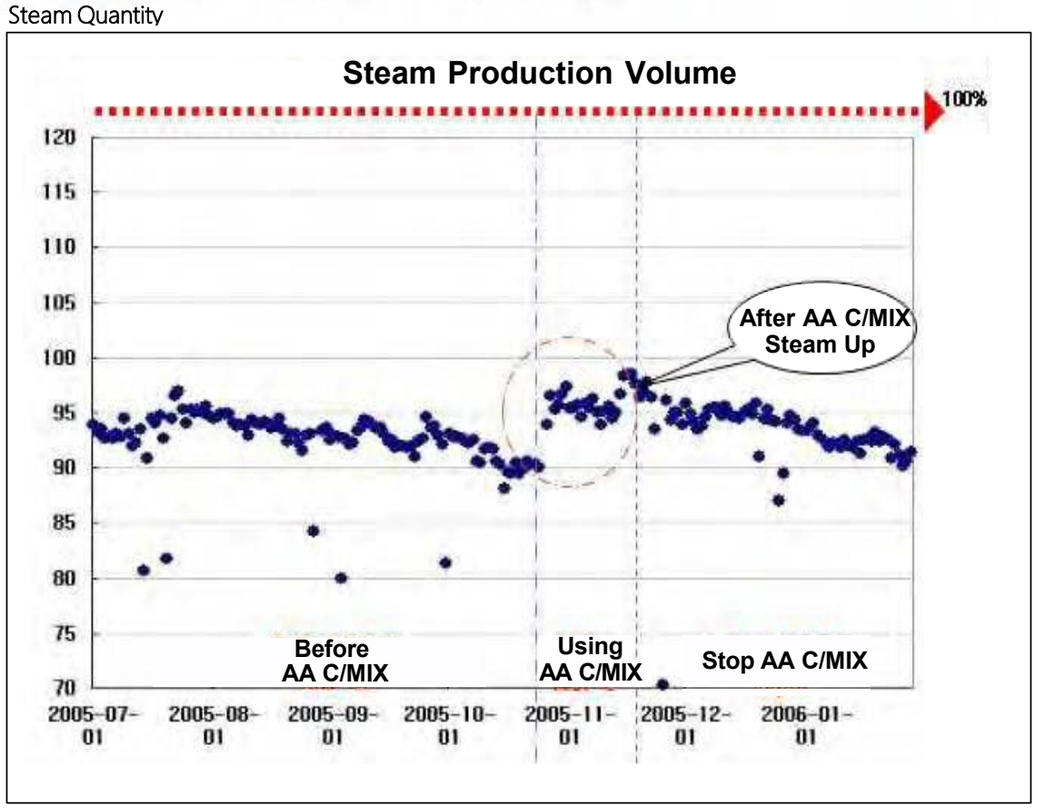
Changes in Steam Production after AAJ C-MIX Application

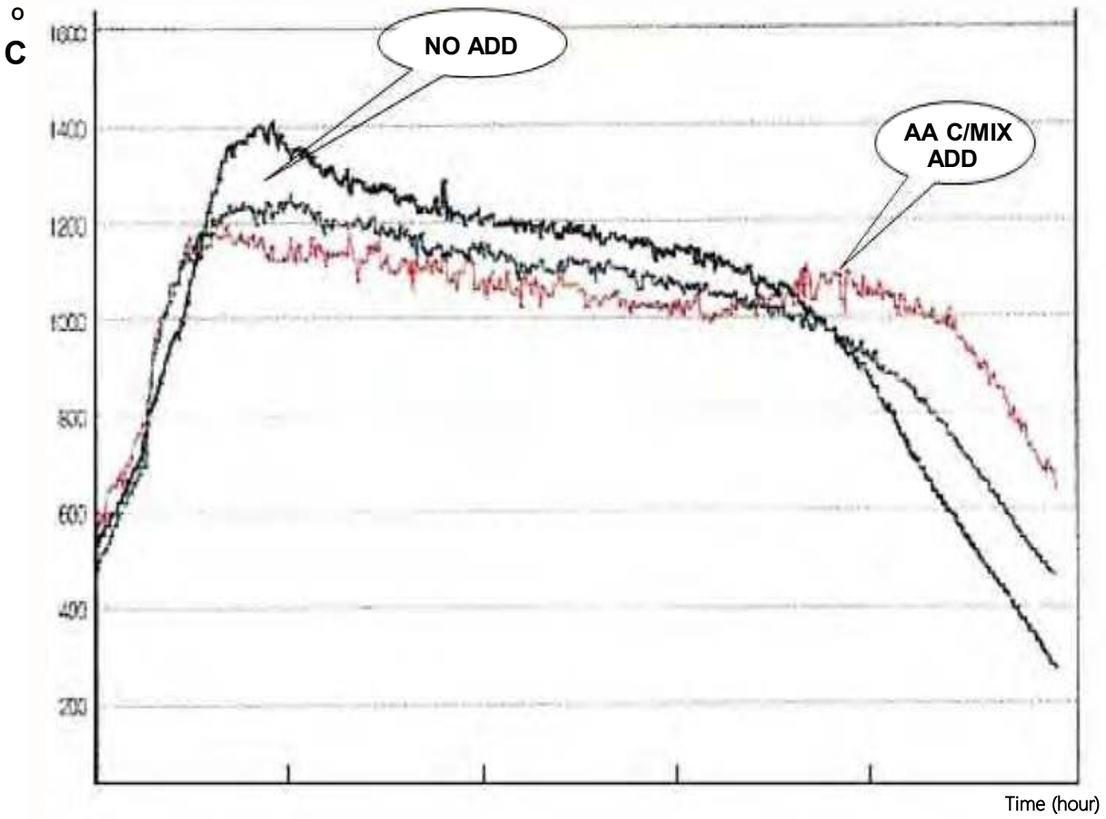
Changes in Steam Production after AAJ C-MIX [in Cuba]

Steam Quantity From 92.8 Ton/h (MCR) To 97.0 ton



Stability of Temperature Reduction after AAJ C-MIX Application

Temperature Control Technology (PC)



Manufacturing Process

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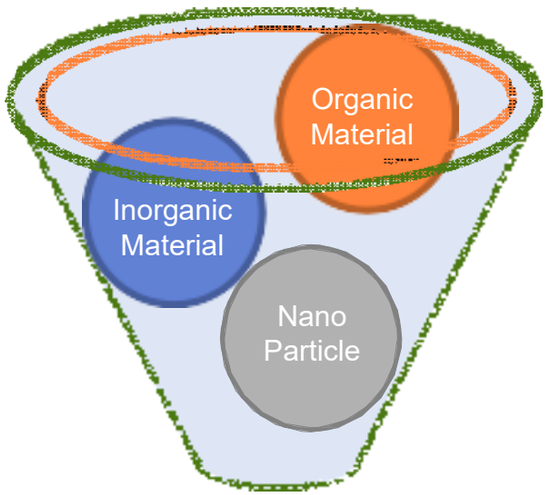
Mechanism



Catalytic Reaction

Production Line

Raw Material Preparation → Primary Reactor → Secondary Reactor → Primary Agitation Synthesis Reaction → First Additive Reaction → Second Additive Reaction (Microbial Reaction) → Annealing → Filtration → Packaging

Why ACF-C?

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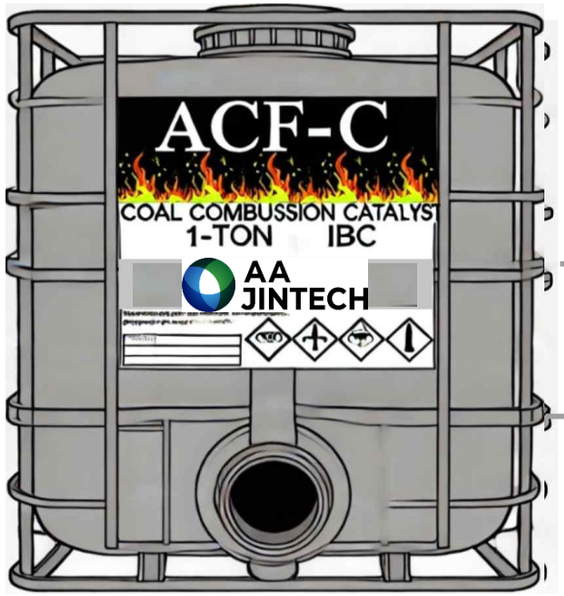
Increase Combustion Efficiency

Suppress Toxic Gas Generation



Remove and Prevent Clinker

Prevent High-Temperature Corrosion

Contact Us

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