

**LAMINAR**  
SOLUTIONS TO PERFORM



INTRODUCING

**COROCLEAN.** PREVENTION IS BETTER THEN CURE

ON-LINE CLEANING AND TREATMENT OF THE  
COMBUSTION SIDE OF BOILERS.



# COROCLEAN COMPOUND

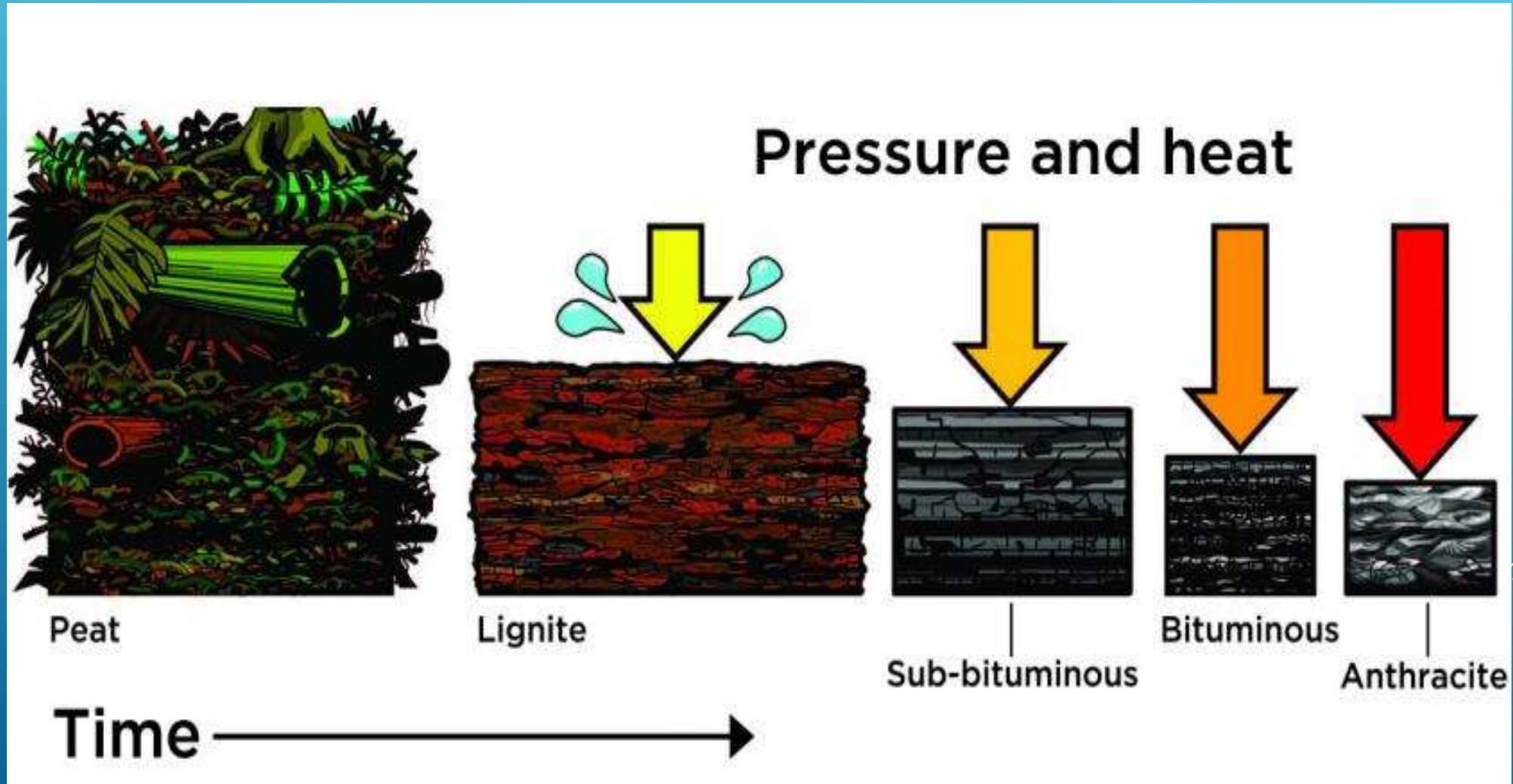
**Coroclean provides Breakthrough in on-line cleaning and treatment of the combustion side of boilers with reliable and economical chemical technology.**

**Coroclean provides simple and cost-effective solution during boiler operation:**

**Coroclean will effectively eliminate or reduce**

- ▶ Fouling
- ▶ Slagging

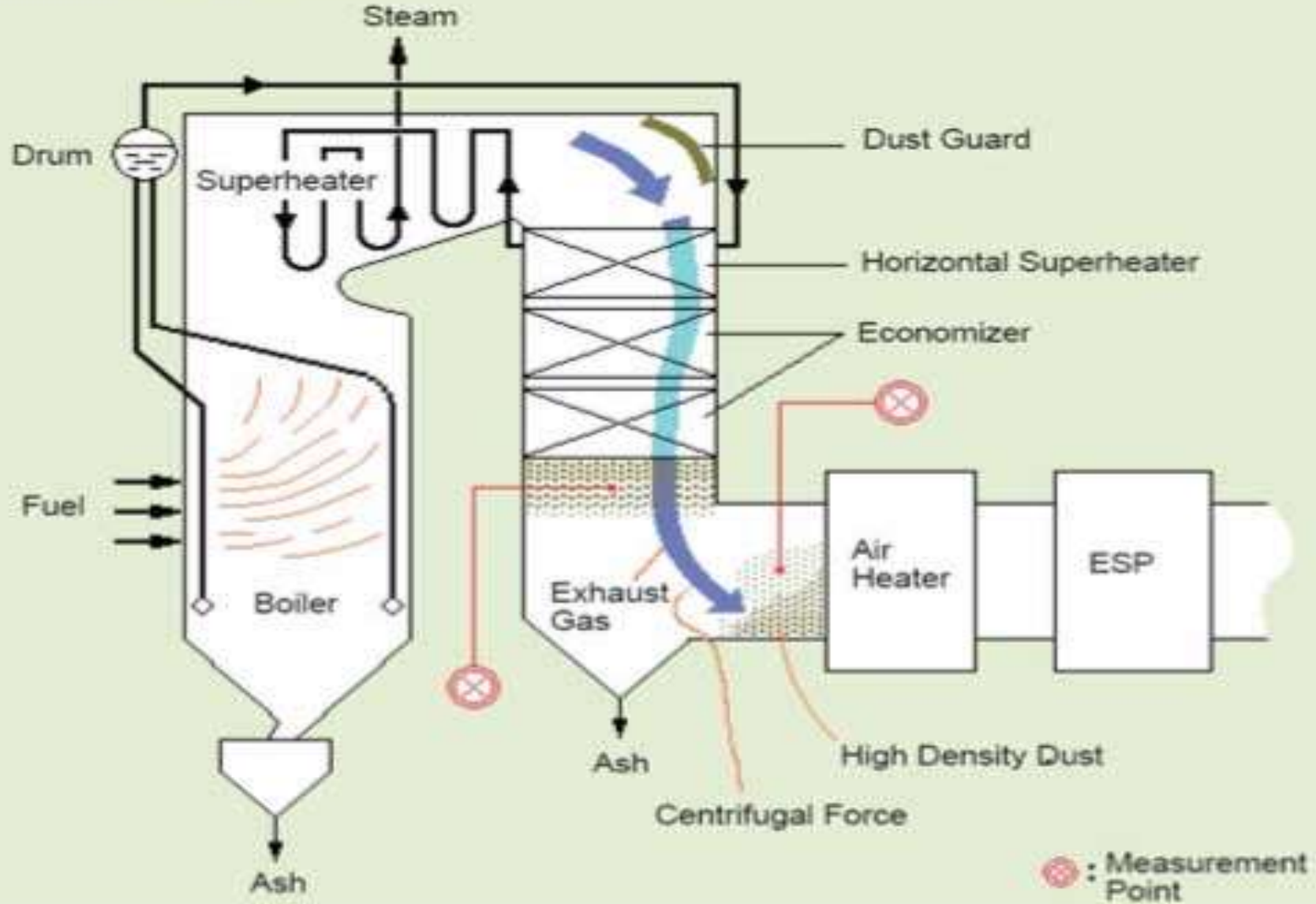
# COAL FORMATION



# IMPORTED COAL AND TYPICAL GRADES

SOURCE	GRADE	MOISTURE %	VM % arb	ASH % arb	NCV kcal/kg	S %
SA	RB1	12% max	22% min	15% max	6000/5850	1% max
SA	RB2	12% max	25% min	20% max	5850/5600	1% max
SA	RB3	14% max	20% min	23% max	5500/5300	1% max
Indonesia		34-37%	39-43%	3-7% adb	4200/4000 GAR	0.1-1%
Indonesia		33-36%	38-42%	6-10% adb	4200/4000 GAR	0.2-1%
Indonesia	Sub-bit	41-43%	38-42%	6-10%	3400-3600 GAR	0.4-1%
Indonesia	Sub-bit	38-42%	38-42%	6-10%	3800 GAR	0.4-1%
Indonesia	Sub-bit	24-26%	38-42%	3% max	4800-5000 GAR	0.15%

# Pulverized Coal Boiler

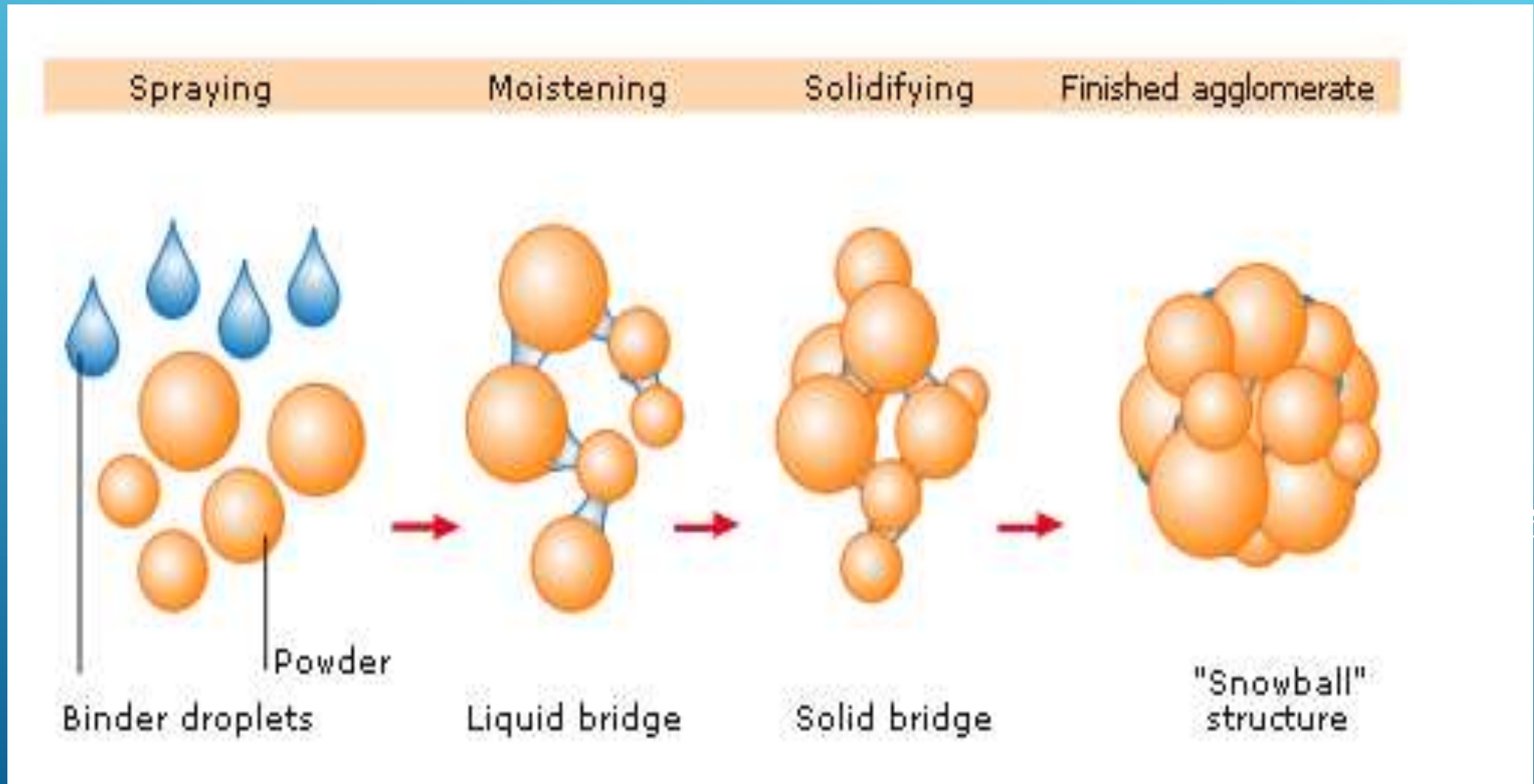


# CLINKER FORMATION

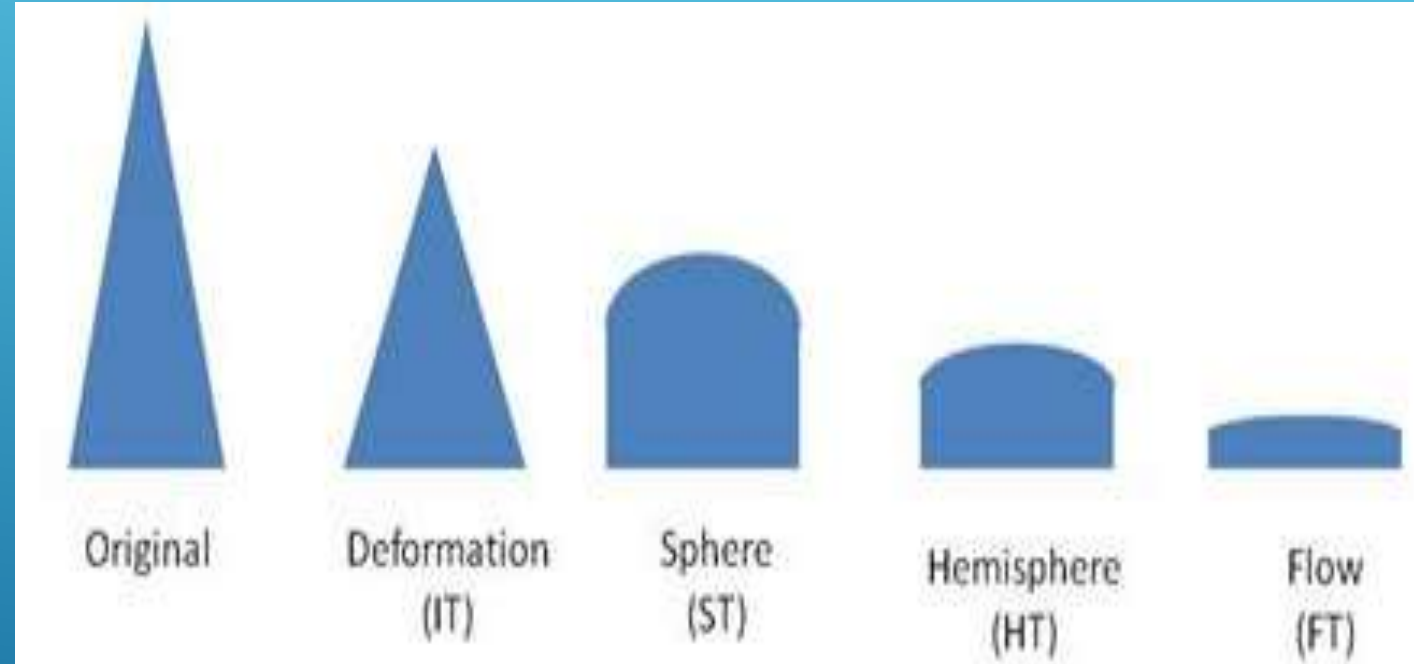
- ▶ Clinker is a mass of rough, hard, slag-like material formed during combustion of coal due to low fusion temperature of ash present in coal.
- ▶ Typically Indonesian coals contain ash fusion temperature as low as 1000 C.  
( being sub-bituminous coal)
- ▶ Once clinker is formed, it has a tendency to grow (agglomerations process)



# CLINKER FORMATION - AGGLOMERATION

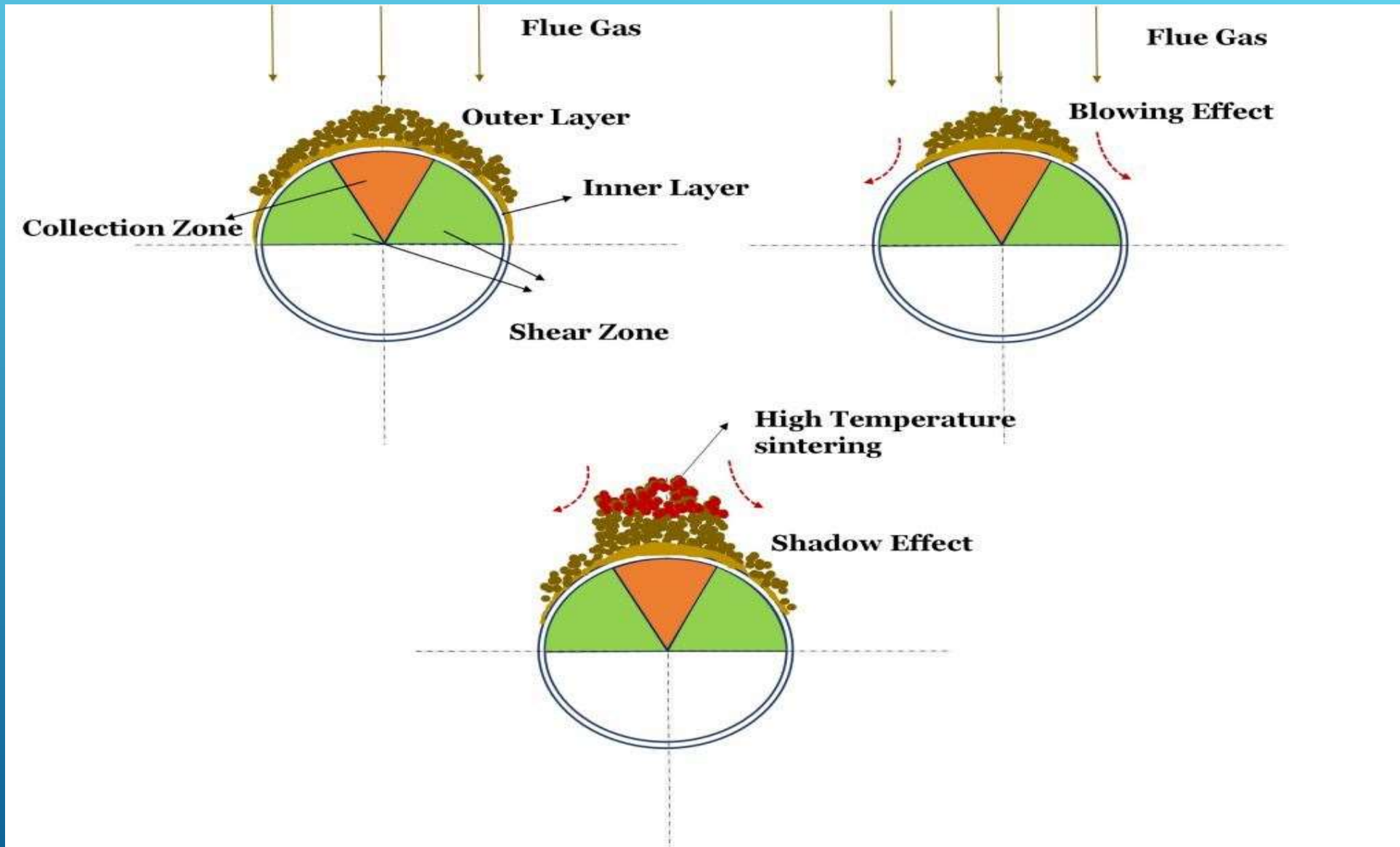


# ASH FUSION TEMPERATURE





# ASH SLAGGING, FOULING AND DEPOSITION



# CURRENT SITUATION

- ▶ **Soot-blowing** operations using high velocity water and/or steam jets.
- ▶ However, in extreme cases, severe ash deposition can force unscheduled outage of a unit - reducing the unit's availability. ( with Indonesian coal this happen more)
- ▶ The cleaning of severe fused ash deposits from the furnace walls/SH can sometimes be an expensive and unsafe process .
- ▶ **MGO** : It can only feed by blending with coal, Larger particle size, It can only feed into powdered normally however it has limited result.

(a)

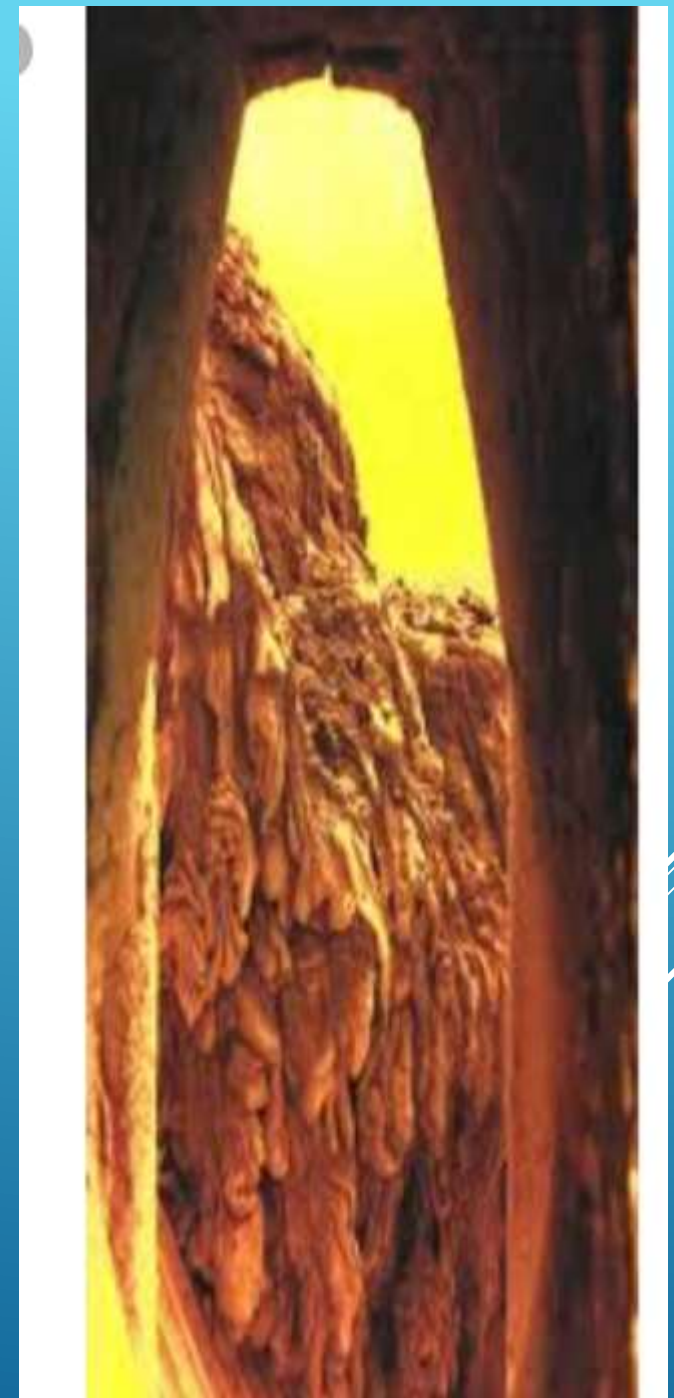


(b)



(c)








# BENEFITS OF COROCLEAN TREATMENT

PREVENTION PROCESS.- A TESTED FORMULA

- ▶ The cleaning of the boiler/furnace is carried out on line without an unscheduled shutdown by injecting chemical which remove deposit as well soften it so easily removed during soot blowing.
- ▶ Restoration of lost capacity, due to fouled heat transfer surfaces.
- ▶ Clean furnace will result greater availability of boiler with better efficiency.
- ▶ Reduction, of soot blowing operations there by reduction in chances of leaks.
- ▶ Reduced cleaning time and minimise risk of clinker falls when shutdowns are taken.
- ▶ power consumption of FD and ID fans remain close to design.

# HOW TO APPLY COROCLEAN

- ▶ Direct injection in to flue gas – inside furnace while furnace is in operation.
  - ▶ Injection through pump with diluted water Pressure – 3 to 4 kg /cm<sup>2</sup> at injection point.
  - ▶ Accessible locations around Boiler and furnace periphery
  - ▶ Nozzle and Lance –
  - ▶ Injection can be done through Peep holes or other convenient locations.
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- A decorative graphic consisting of several parallel white lines of varying lengths and thicknesses, arranged diagonally from the bottom right towards the top right of the slide.



# DOSAGE

## **First Time**

- ▶ When Surfaces are fouled and to be used first time.
  - ▶ Shock treatment , based on boiler size, scaling etc.

## **Continuous**

- ▶ For regular Use- prevention is cure
- ▶ Regular dose will be decided based on coal AFT, boiler size and its design.

# DATA NEEDED

- ▶ Boiler design data, like design coal, Design AFT of coal VS available AFT of coal being used. Slagging tendency of coal used, operation parameters like entire boiler temperature profile. History
- ▶ Injection points.

THANK  
AND  
DISCUSSION.

