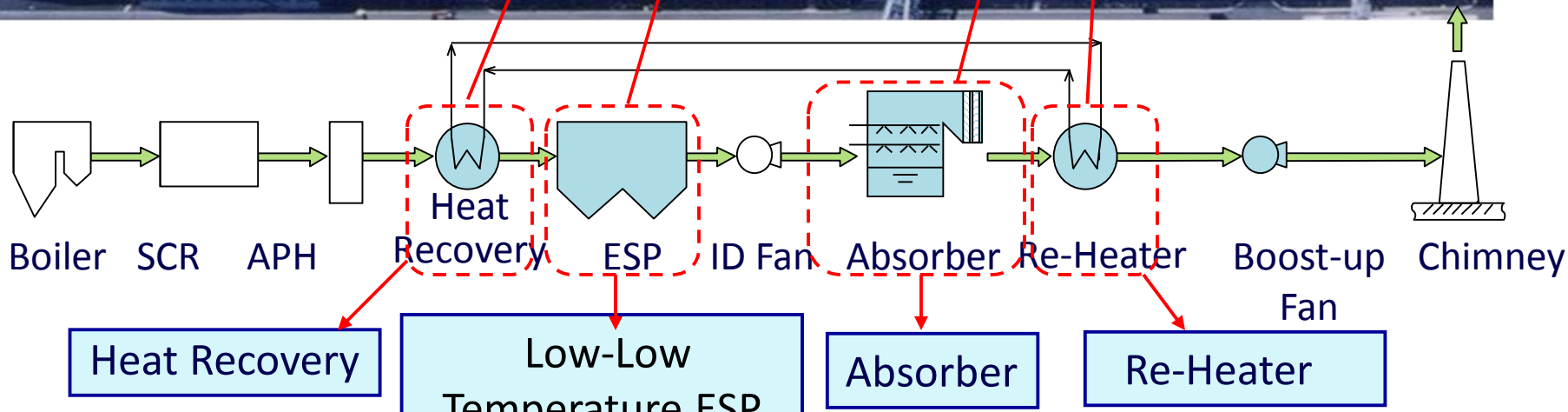


# Low-low Temperature ESP System

## System Composing

常陆那珂火力发电厂的全景图

Panorama of Hitachinaka Thermal Power Plant



## Low-low Temperature ESP System

### Technology Advantage

*Recover 5% heat*

*Heat boiler feedwater, increase the boiler efficiency;  
Heat the soot after the absorber*

*Low inlet soot temperature, low inlet temperature of absorber water  
High EP Efficiency*

*In case of ESP retrofit, low the dust concentration or increase purity of gypsum.*

*Low inlet temperature of absorber water*

*The body of ESP can be miniaturized.*

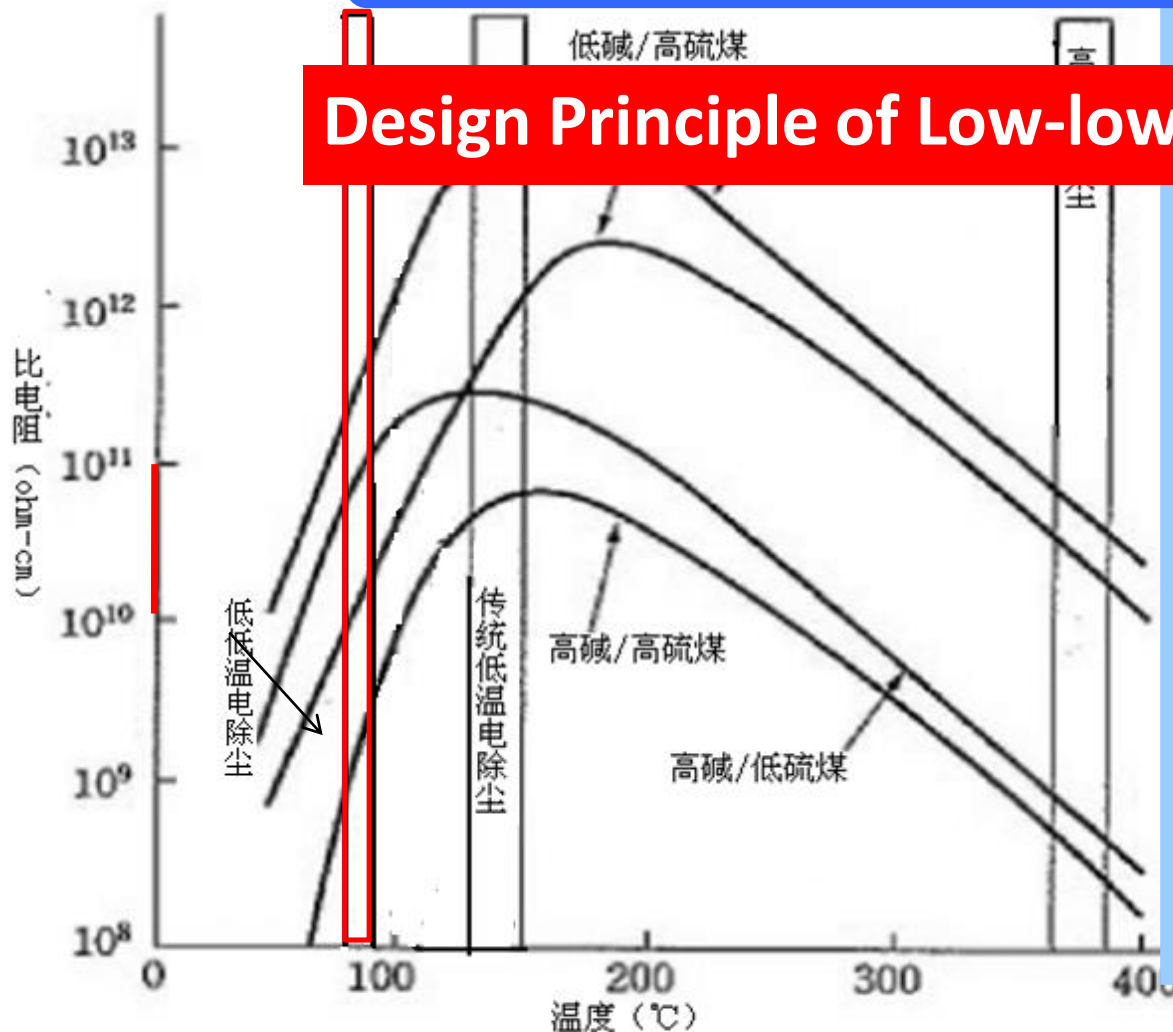
*Condensation  $H_2SO_4$  under dew point temperature  
alkalinity material in the dust.*

*Decrease FGD feedwater*

*Prevent the body of heat recovery and equipments of downstream from corrosion.*

## Low-low Temperature ESP System

### Design Principle of Low-low Temperature ESP



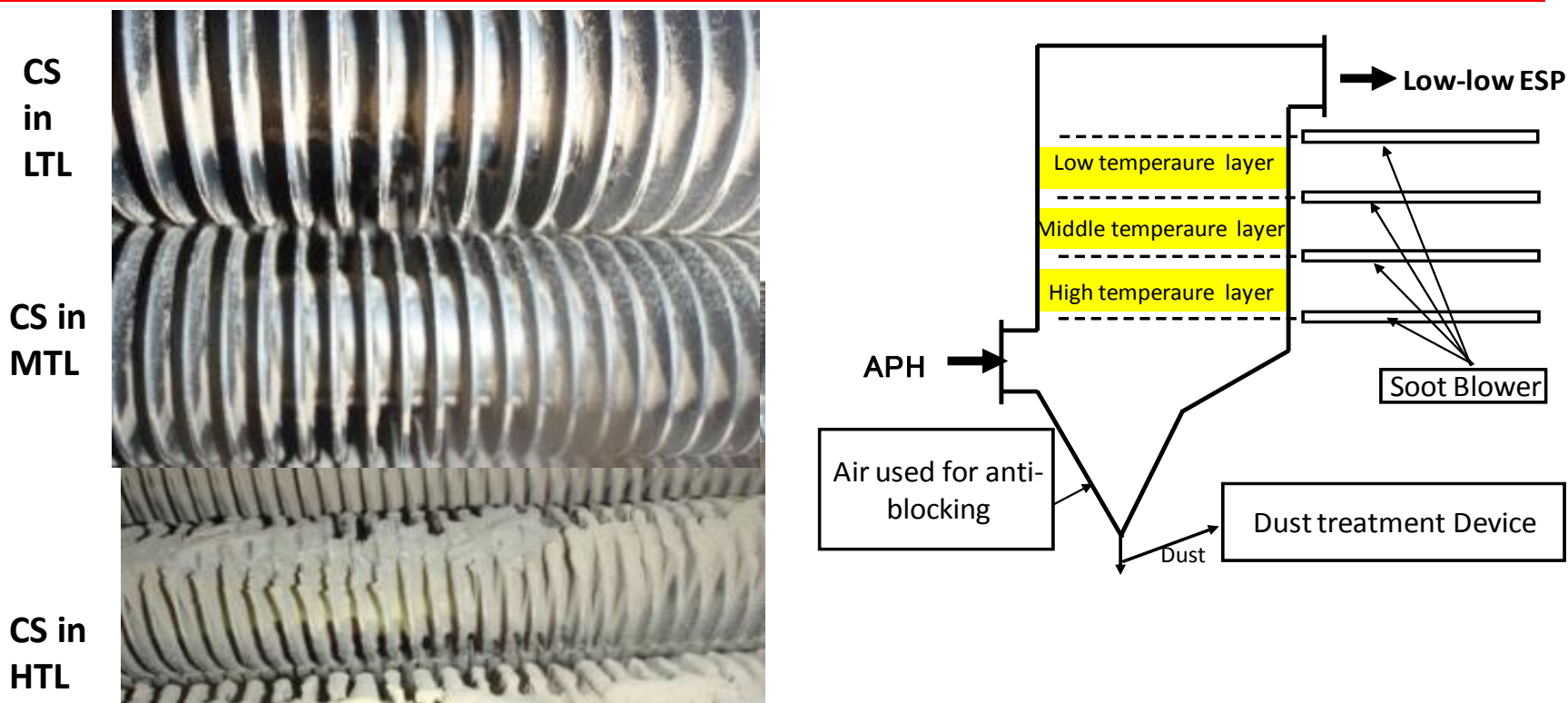
温度对飞灰比电阻的影响

The low-low

the volume flow and DSR become lower along with temperature fall. The dust is easiest to be captured with the DSR below than  $10^{11}$ . So the De-Dust efficiency will enhance obviously when the temperature of the Soot flowing through the EPS locates between 80 and 100°C.

## Low-low Temperature ESP System

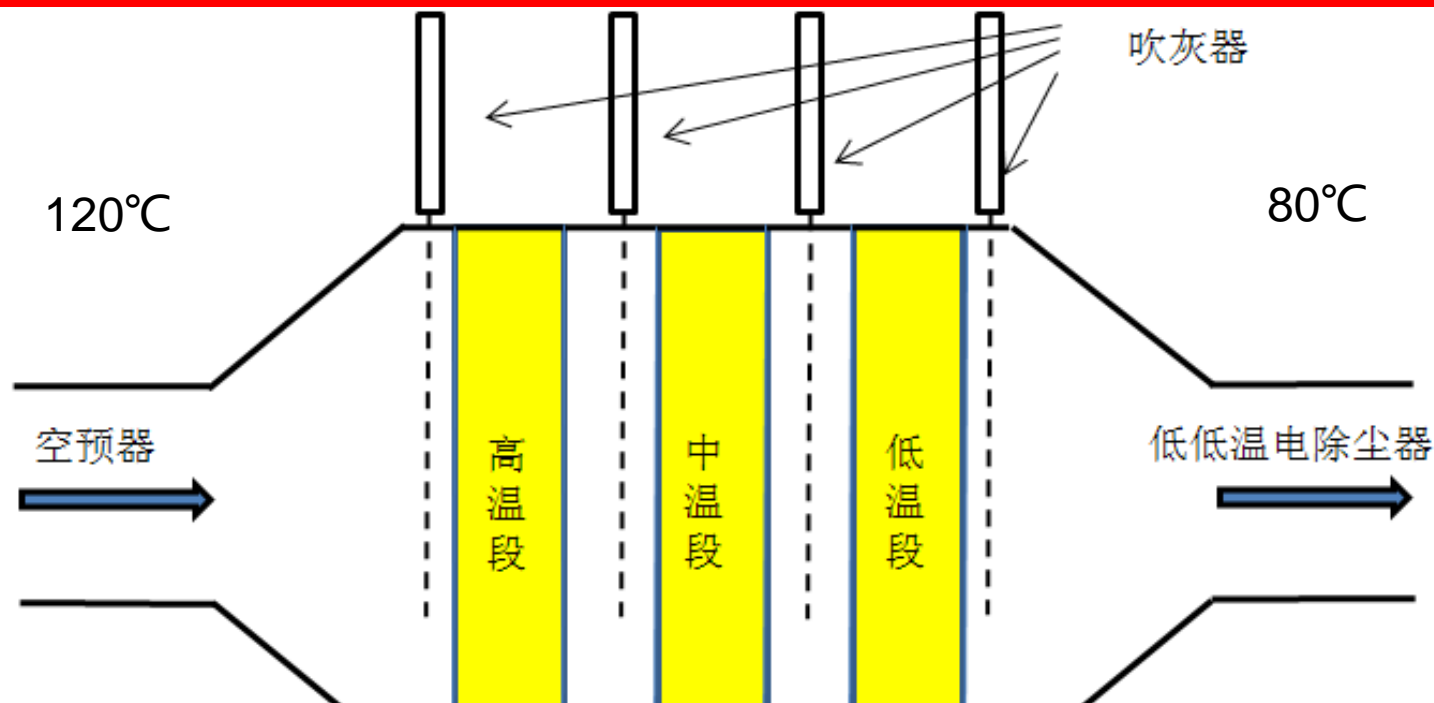
### The Structure Diagram of Heat Recovery Inside-Vertical Flow



Vertical heat recovery is better for  $\text{SO}_3$  removal as lower flow and longer contact time of dust and soot. The ash hopper is set to remove the most big particulate dust.

## Low-low Temperature ESP System

### The Structure Diagram of Heat Recovery Inside-Horizontal Flow



The horizontal flow is suitable for retrofit, smaller room and don't need ash hopper.



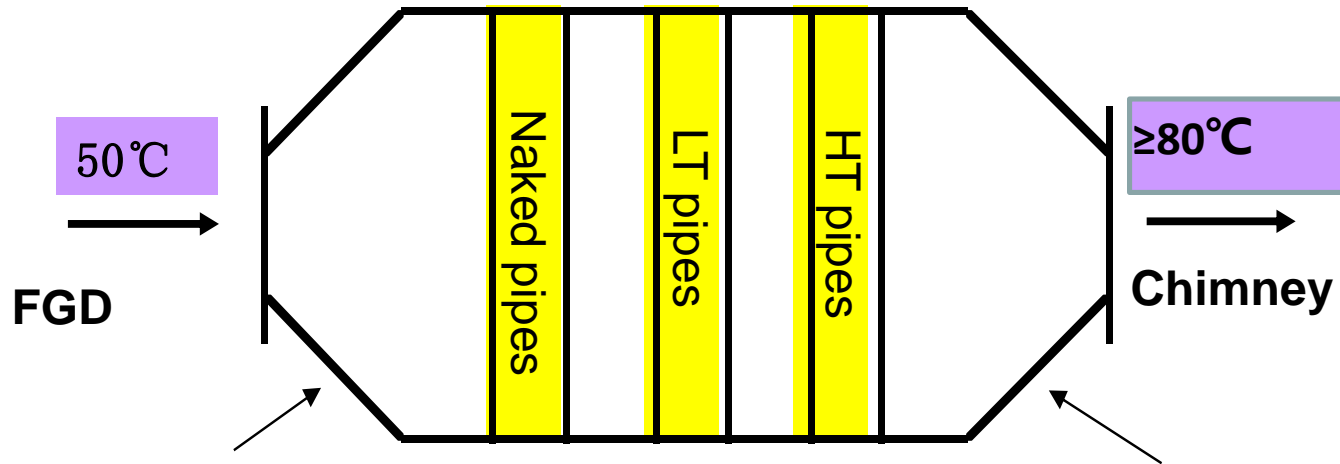
## Low-low Temperature ESP System

### The Object Picture of Heat Recovery



# Low-low Temperature ESP System

## The Structure Diagram of Re-heat Inside



CS + flake lining

Stainless Steel

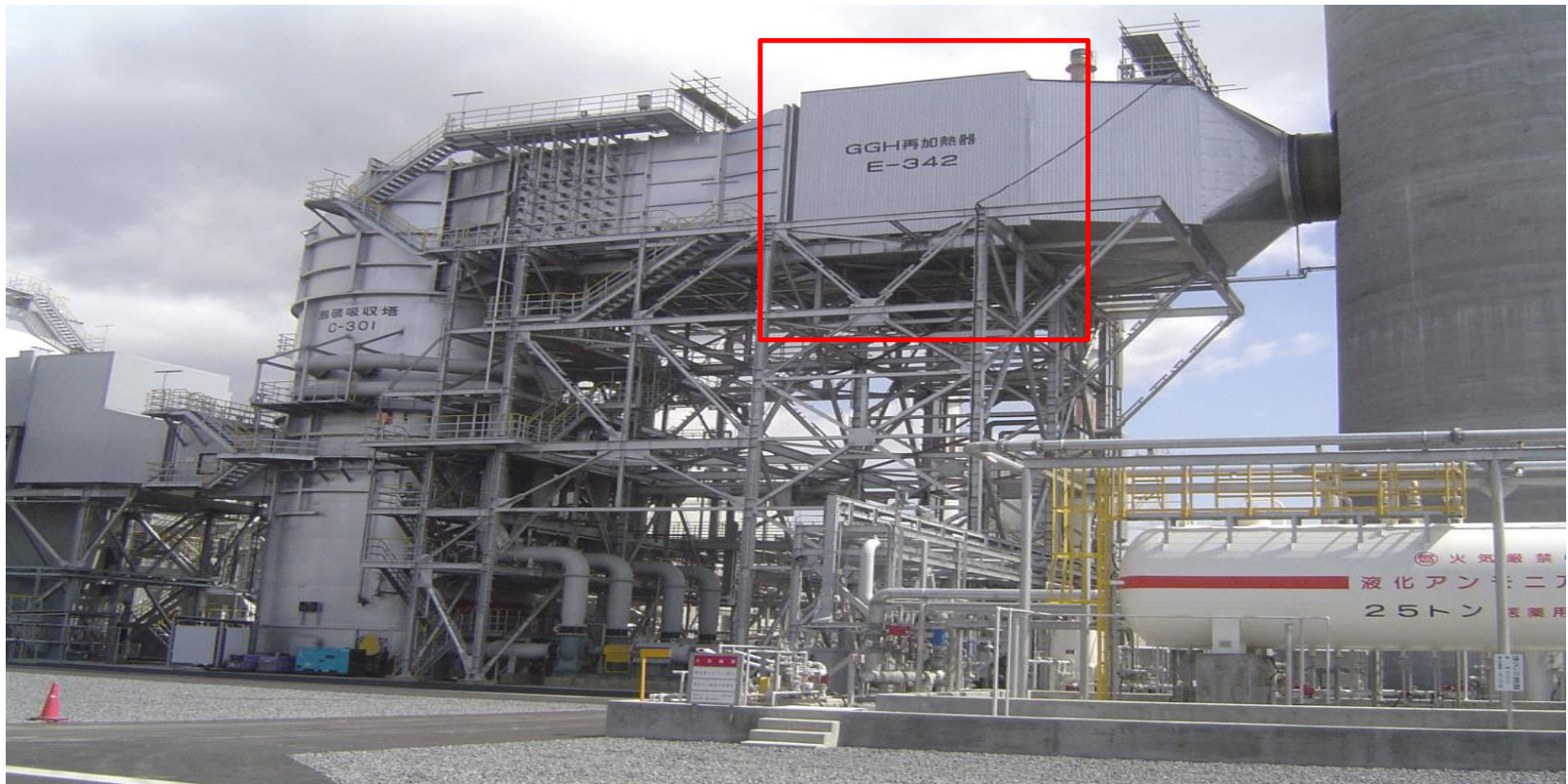
H<sub>2</sub>SO<sub>4</sub> Resistance Steel

CS

H<sub>2</sub>SO<sub>4</sub> Resistance Steel

## Low-low temperature ESP System

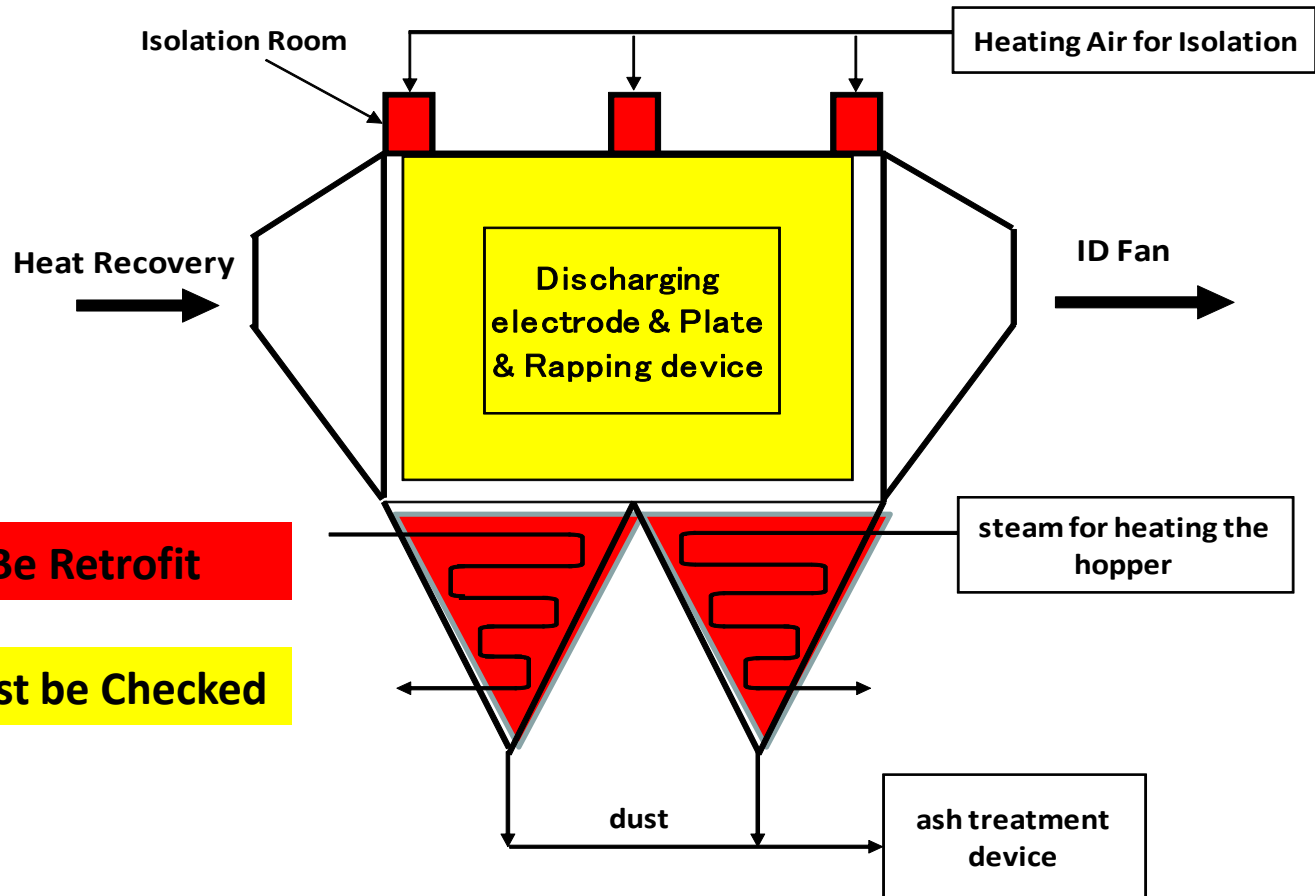
### The Object Picture of Re-heat





# Low-low Temperature ESP System

## The Structure Diagram of Low-low ESP

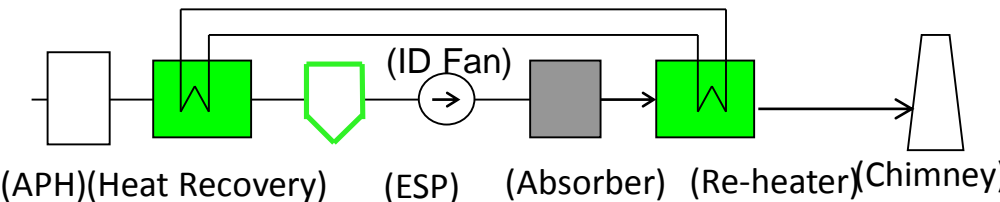
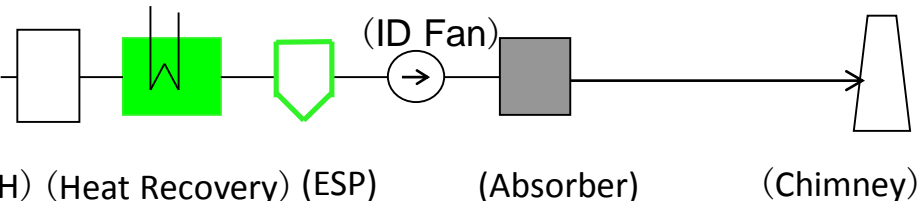
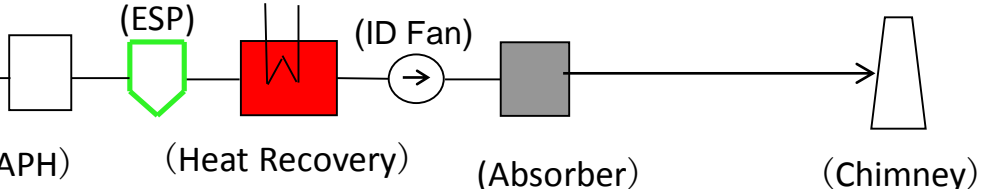


**Red: Must Be Retrofit**

**Yellow: Must be Checked**

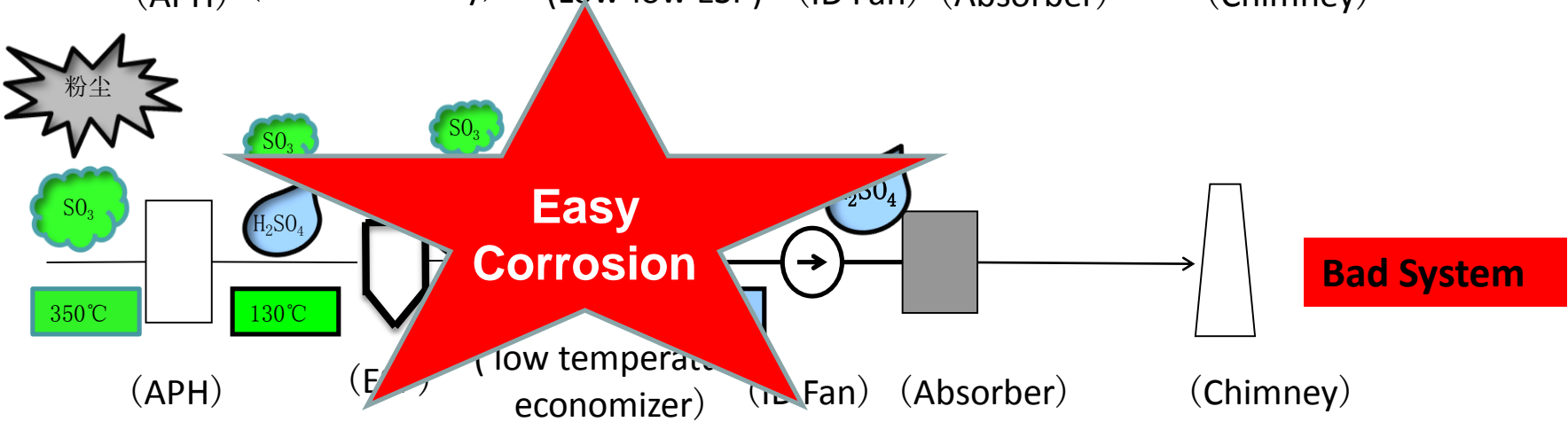
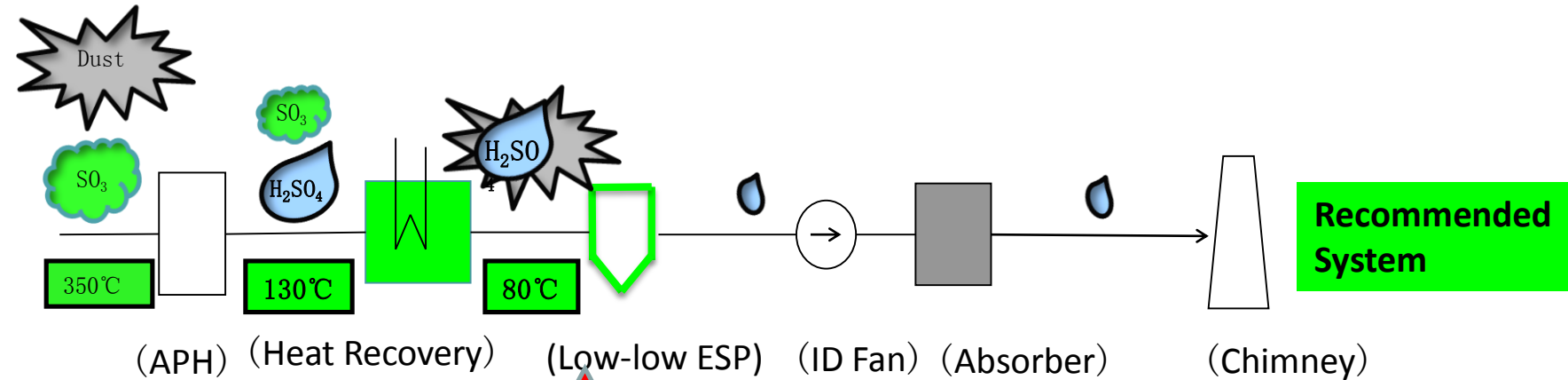
# Low-low Temperature ESP System

## The Structure Diagram of Low-low ESP

System	设备构成	
<b>LLT ESP</b> ---EP	 <p>(APH) (Heat Recovery) (ESP) (Absorber) (Re-heater) (Chimney)</p>	○
<b>LLT ESP</b> ---Energy Saving	<p>(Heat the Boiler Feed water)</p>  <p>(APH) (Heat Recovery) (ESP) (Absorber) (Chimney)</p>	○
<b>Conventional ESP + low temperature economizer</b>	<p>(Heat the Boiler Feed water)</p>  <p>(APH) (Heat Recovery) (Absorber) (Chimney)</p>	✗

# Low-low Temperature ESP System

## Anti-Corrosion Principle of Low-low ESP



## Low-low Temperature ESP System

### Recommended Material for Heat-Exchanger

	Heat Recovery		Re-Heat	
Housing	CS		CS + Flake Lining	
Pipe for heat exchanger	High-temperature Section	CS	High-temperature Section	CS
	Low-temperature Section		Low-temperature Section	ND Steel
			Naked pipe	Stainless Steel