

LOCAL SCRUBBER

EQUIPMENT INTRODUCTION



Equipment Name: LOCAL SCRUBBER

Equipment Functions

Through high-temperature plasma electric arc cracking, combined with wet scrubbing to purify toxic gases. Can handle PFCs, silicide, flammable gases, water-soluble gases, toxic gases, etc.

Equipment Features

- High processing efficiency
- Simplified PLC operation
- Safety interlock design

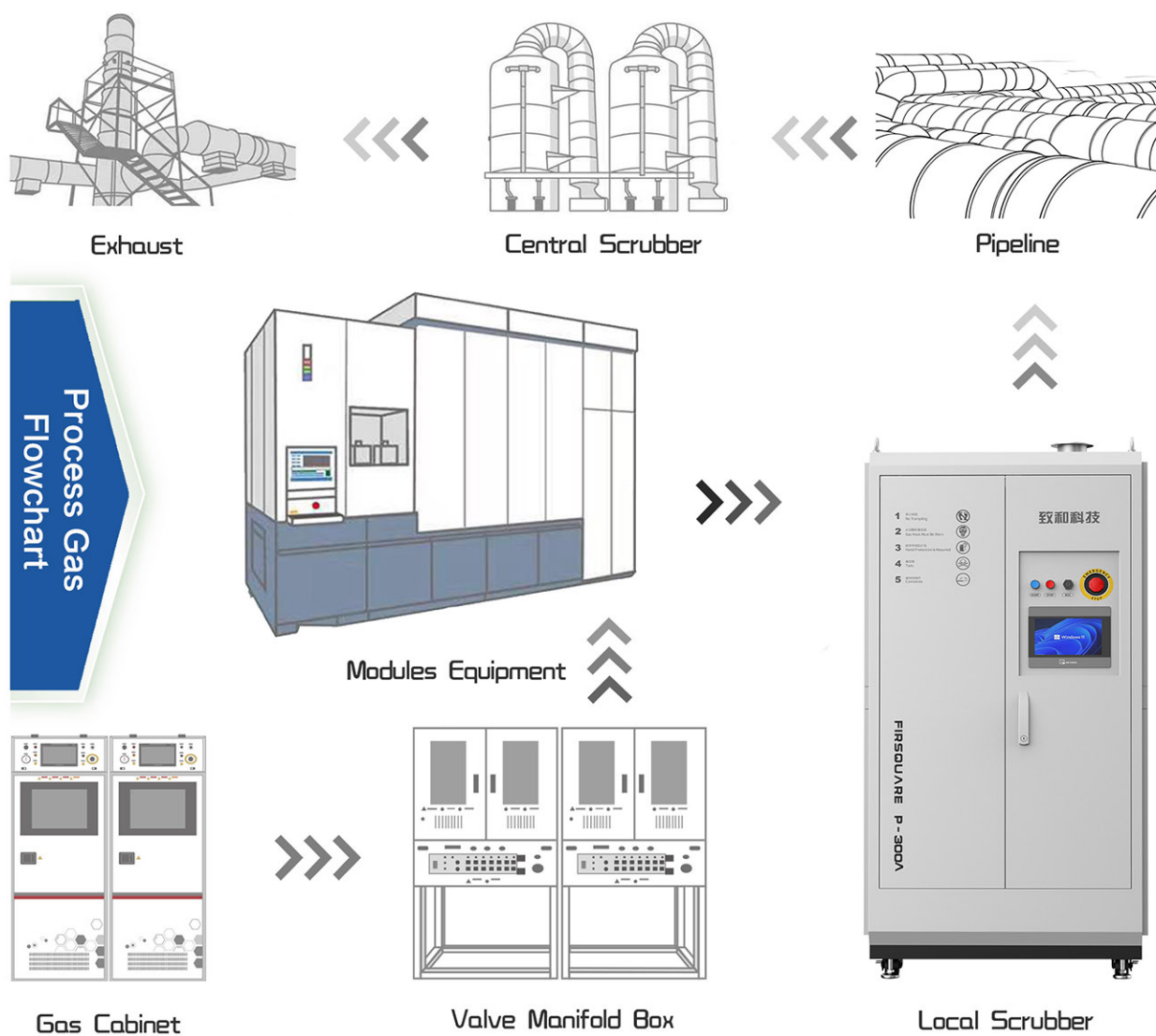
Application Technology:

Etching/Thin Film/Diffusion

Application Industries:

Semiconductor/Photovoltaics/Solar Energy

Model	P-300A	P-600A	WP-300A
Scrubber Type	Plasma-Wet		Microwave Plasma-Wet
Treatment Gas	PFCs, Silicide, Flammable gases, Water-soluble gases, Toxic gases, etc.		
Dimensions (mm)	900W * 1000D * 1850H	1200W * 1300D * 2000H	900W * 900D * 1600H
Treatment Capability (LPM)	300	600	300
Working Temp(°C)	Above 1500°C		
Inlet Port Type	NW50 * 1~4 ports	KF80 * 1~4 ports	NW50 * 1~4 ports
	NW50 * 1~4 ports	KF80 * 1~4 ports	NW50 * 1~4 ports
Outlet Port Type	ISO100 * 1 port	ISO160 * 1 port	ISO100 * 1 port



## DESTRUCTION REMOVAL EFFICIENCY

GAS	DRE	GAS	DRE
CF <sub>4</sub>	>90%	CHF <sub>3</sub>	>99%
SF <sub>6</sub>	>95%	C <sub>4</sub> F <sub>8</sub>	>99%
NF <sub>3</sub>	>99%	H <sub>2</sub>	>99%
N <sub>2</sub> O	>95%	C <sub>2</sub> H <sub>2</sub>	>99%
SiH <sub>4</sub>	>99%	WF <sub>6</sub>	>99%

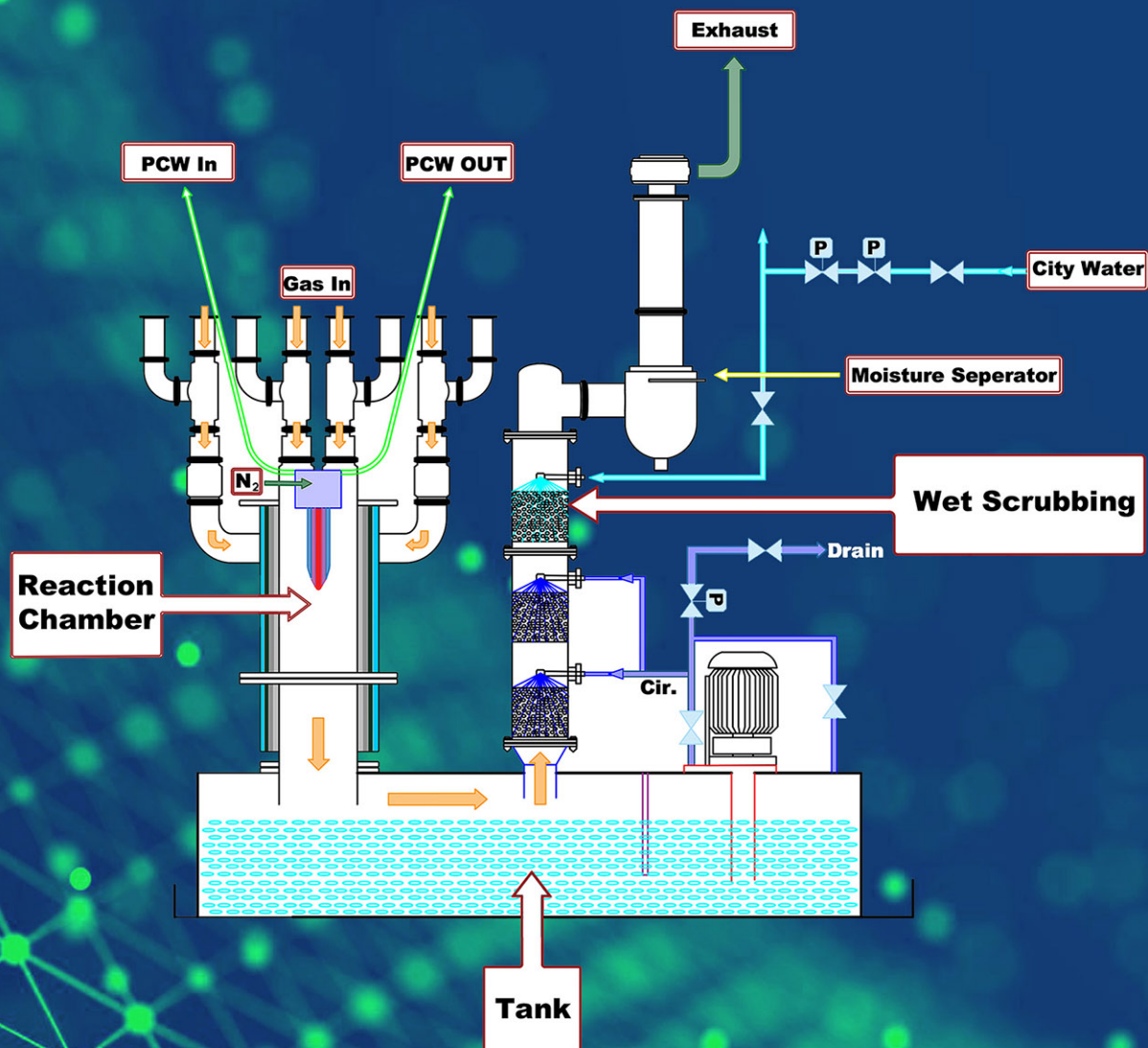
## EQUIPMENT WORKING PRINCIPLE

### Processing Flow

The exhaust gas enters the reaction chamber through the inlet and decomposed by high-energy plasma.

A portion of the gas is decomposed into powders ( $\text{SiO}_2$ ,  $\text{WO}_3$ , etc.). The powder is scoured to the bottom water tank and directly enters the dust filter. Installing the filter can avoid excessive powder in the circulating water, which would cause water waste.

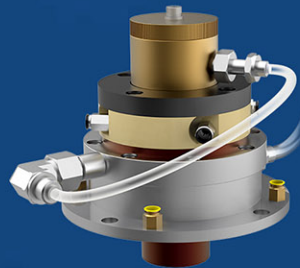
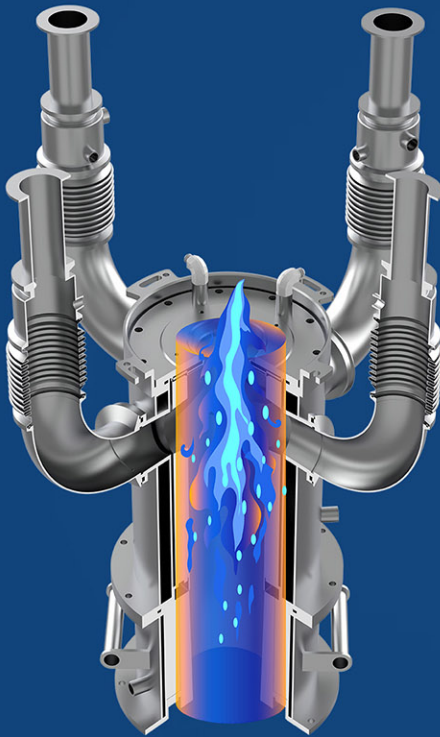
Part of the gas becomes free ions and is dissolved in water through a wet scrubbing process ( $\text{HCl}$ ,  $\text{HBr}$ ,  $\text{Cl}_2$ , etc.). Some of the gas is converted into more stable non-toxic and harmless compounds, then pumped to the rear exhaust system ( $\text{N}_2$ ,  $\text{CO}_2$ , etc.).





# EQUIPMENT CHARACTERISTICS

## COMBUSTION SECTION



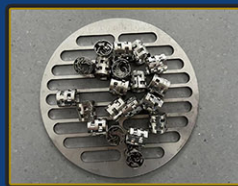
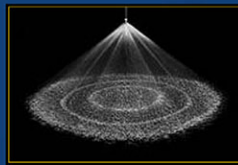
### Reaction Chamber

- Cyclone type gas injection, better thorough mixing
- PCW cooling on the outer wall achieves rapid temperature reduction
- Internal insulation design to interrupt thermal bridges

### Combustion Torch

- Large jet passage: positive electrode cavity diameter up to 20mm, strong exhaust gas treatment capability and adaptability
- Special structure of positive and negative electrodes: good inter-electrode distance control, special materials with better thermophysical properties, excellent erosion resistance, long service life
- Built-in annular magnet: axial distribution of the magnetic field contributes to the formation of a uniform plasma region, reducing the sputtering of plasma on the reaction chamber walls

## WASH SECTION



### Water Vapor Separation Section

- Gravity settling and centrifugal force separation reduce the accumulation and blockage of steam and dust in the downstream ductwork.

### Atomization Burner

- Micro fog with an average particle size of less than  $500\mu\text{m}$ , effectively intercepts dust

### Filter Mesh + Filter Ring

- Water mist forms a water film on the surface of the filter ring, providing excellent gas-liquid mass transfer area
- Easy to washout detained dust and improve dust capture efficiency

### Water Tank

- SUS316L+PFA High strength, acid and alkali resistance, and great thermal resistance
- Built-in multiple liquid level sensors to monitor water level
- Inlet is set with multiple high flow spiral nozzles to cool down
- Set up partitions for easy cleaning the inside of the water tank, and install filter mesh to intercept dust

## SAFETY INTERLOCK DESIGN

---

### Electricity Guarantee

The equipment cannot be started when the safety interlock switches open;  
The safety interlock switches must be closed before the equipment start.  
Equipment starts, the safety interlock switch cannot be opened;  
Equipment shutdown, the safety interlock switch can be opened.

### Temperature Guarantee

The outlet of the local scrubber is equipped with a thermocouple temperature detector. When the temperature of exhaust gas exceeds 50°C, the PLC sends alarm signal and the equipment immediately stops working.

### Liquid Level Guarantee

High liquid level: The drainage pump discharges sewage until the water level drops to the low liquid level, and then automatically stops draining;  
Ultra-high liquid level: The City Water system will automatically shut off, and the PLC alarm.

### Leak-proof Guarantee

The bottom of the water circulation system has leak tray, if leakage occurs, the liquid leakage detecting sensor will transmit an alarm signal to the PLC.

### Fireproof Guarantee

If abnormal smoke occurs in the Rack or electrical control box, the detector sends an alarm signal to the PLC, activating the safety module, causing the equipment to stop operating immediately.

### Pressure Guarantee

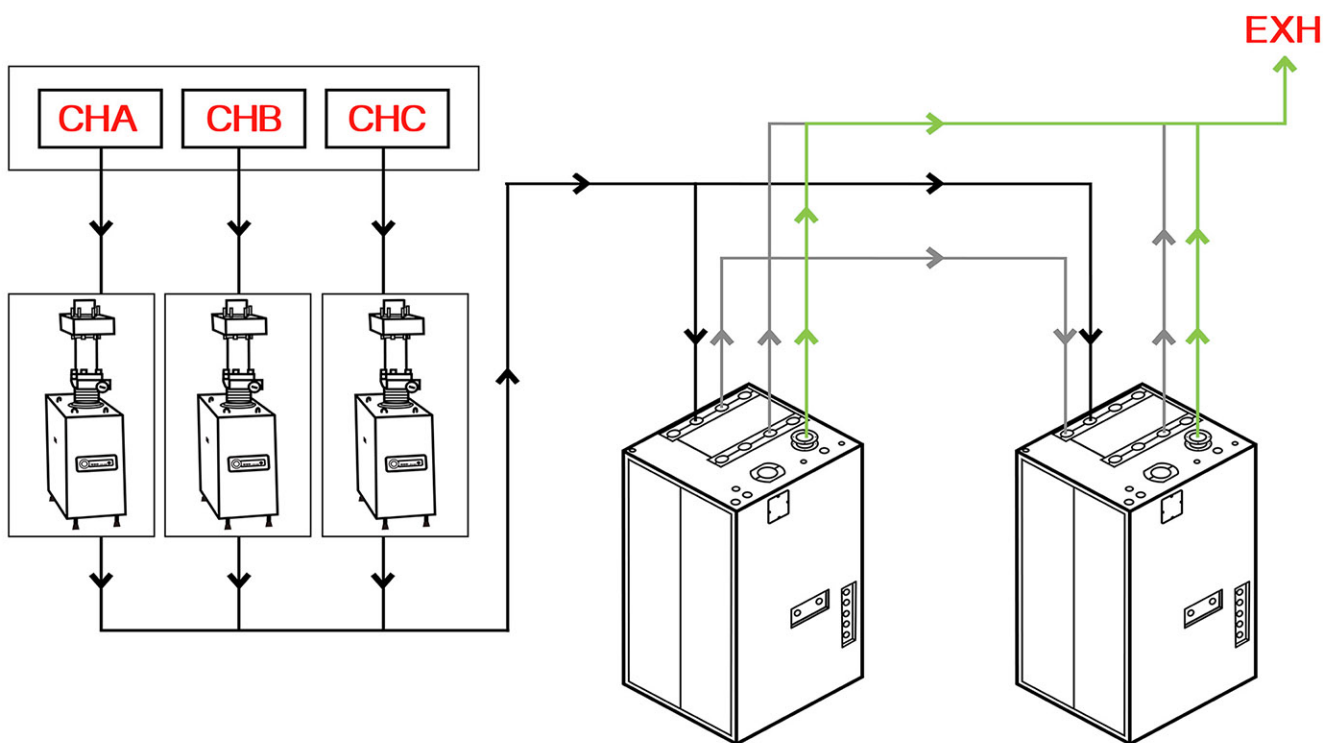
Both of the inlet and outlet are equipped with pressure detectors. If the inlet/outlet passages or reaction tanks are blocked, the inlet/outlet pressure exceeds the set value, the PLC triggers an alarm bell and the equipment will immediately stop operating.

## AUTO BYPASS SYSTEM

### Application

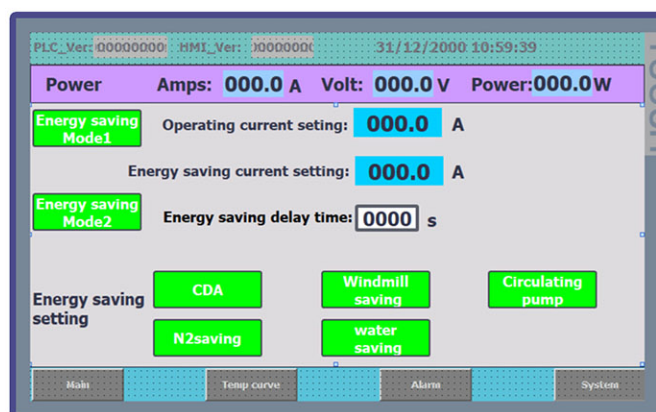
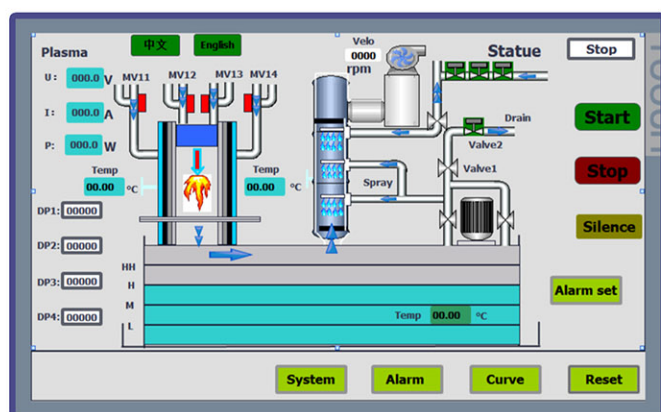
Used between Local Scrubber units or from Local Scrubber to Exhaust.

In case of abnormal conditions (insufficient negative pressure, exhaust gas reflux, exhaust gas blockage, etc.), the system will automatically switch to the backup machine.



## OPERATION INTERFACE

- ※ Utilizing the Siemens S7-1200 series PLC with modular programming design for easy operation.
- ※ When the system is abnormal, the HMI displays alarm, the three-color light shows red, and the buzzer sounds an alarm. After the alarm is eliminated, the system starts up normally.
- ※ The system can store 2000 historical alarm information for easy retrieval.
- ※ Real-time display of equipment operation animation: combustion section working status/working temperature/real-time pressure at each vent/cooling water temperature/liquid level, etc.







A. No. 209, Zhangjing East Section, Xigang Road, Xishan District, Wuxi City  
T. 0512-66319366-80000  
E. [sales@zhihefs.com](mailto:sales@zhihefs.com)  
W. [www.zhihefs.com](http://www.zhihefs.com)