



INDUSTRIAL AIR TREATMENT

Solutions and Technologies

Zhengzhou Enviro is a High-Tech Enterprise dedicated to innovative environmental equipment R&D, manufacturing, and global project engineering for

Acid-Base Waste Gas, VOCs

Treatment Odor Treatment

Airborne particulate matter treatment

We offer one-stop solution for Air Pollution Control and High-end Energy-saving Fans:



Design & Engineering



Maintenance & Support



Internal Installation

We have carried out more than 500 projects in over 20 countries all over the world.



SOME OF OUR PROJECTS



Guangdong Junjing Intelligent
Science and Technology Park

China - 2025

Zecdli oto+RTO for Printing Indstryat



Tongchuan Kaili New
Material Technology Co., Ltd.

China - 2025

VOCs exhaust gas treatment/catalytic
combustion



Xi'an KaiLi New Material Co., Ltd.

China - 2025

VOCs Exhaust Gas Treatment Project



Guangdong Sihui Commercial
Avenue West Reconstruction
Project

China - 2025

Exhaust Gas Odor Treatment Project
/ Main Biological Odor Treatment
Process

Acid-Base Waste Gas, VOCs Treatment

Acid-base waste gas and VOCs pose serious environmental and health risks—from equipment corrosion and atmospheric pollution to photochemical smog formation and unpleasant odors. These challenges demand reliable, compliant solutions.

Zhengzhou Enviro leverages extensive engineering expertise and manufacturing capabilities to deliver tailored purification systems for diverse industries. Whether handling corrosive acid mists or complex organic vapors, we ensure operational safety and regulatory compliance.

Our engineers work closely with clients to conduct operational audits and select the optimal technology—chemical scrubbing, carbon adsorption, or biological filtration—providing innovative systems that meet today's standards and tomorrow's challenges.



Acid-Base Waste Gas, VOCs Treatment

zhengzhou enviro provides both destructive and non-destructive technologies for Acid-Base Waste Gas and VOCs Treatment across all industries. As environmental engineering experts, we design efficient solutions tailored to your specific needs — airflow volume, VOC concentration, gas composition, space constraints, and regulatory requirements.

Our proven techniques for comprehensive waste gas treatment include:

Pollutant Removal Efficiency by Process

Pollutant Removal Efficiency by Process	Pollutants										
	Dust	Heavy Metals		Acid Gases		NOx	CO	CO2	Dioxin/ Furan	VOC	Odours
		Particulate	Gaseous	HCl, HF, HBr, HI	SOx						
CATALYTIC OXIDATION (RTO)							■ ■ ■			■ ■ ■	■ ■
WET SCRUBBER	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■ ■			■ ■ ■	■		■
Cyclone Mixed Spray Scrubber	■ ■	■ ■		■ ■	■						■
Multi-effect Circulating Waste Gas Equipment Series	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■ ■				■ ■	■ ■	■ ■
ACTIVATED CARBON FILTERS			■ ■	■ ■	■				■ ■ ■	■ ■ ■	■ ■ ■
BIOFILTERS										■ ■ ■	■ ■ ■
Bipolar Shielded Ionization Technology	■									■ ■ ■	■ ■ ■
Pulse Bag Filter	■ ■ ■	■ ■ ■									
Wet Electrostatic Precipitator (WESP)	■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■ ■					■	

■ Low efficient ■ ■ Efficient ■ ■ ■ Highly efficient

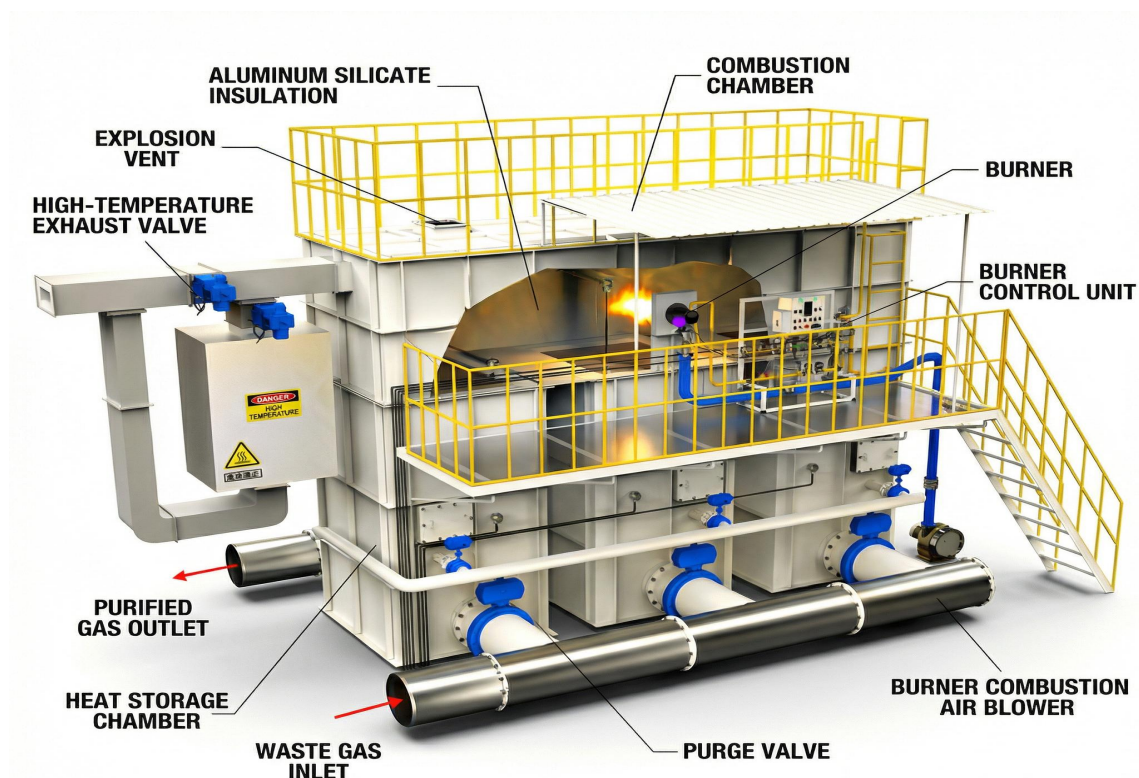
TECHNOLOGIES

CATALYTIC OXIDATION

VOCs waste gas is adsorbed by the zeolite concentration wheel, removing VOCs and allowing purified gas to be discharged directly. The wheel rotates continuously at 1 -6 rpm, transferring the adsorbed VOCs to the desorption zone where heated gas (such as hot air or steam) releases concentrated VOCs. This high-concentration VOCs stream is then sent to a catalytic combustion device, where it is oxidized at approximately 300°C into harmless CO and HO.

Advantages

- High adsorption efficiency >95%
- Low energy consumption
- Continuous automatic operation
- Ideal for high-concentration organic waste gas



TECHNOLOGIES

SCRUBBERS

Structure: Scrubbers include a tower, spray layers, filler layers, a demister, a pump, and a water tank. A typical setup has two sprays, two filler layers, and one demister, with an external pump.

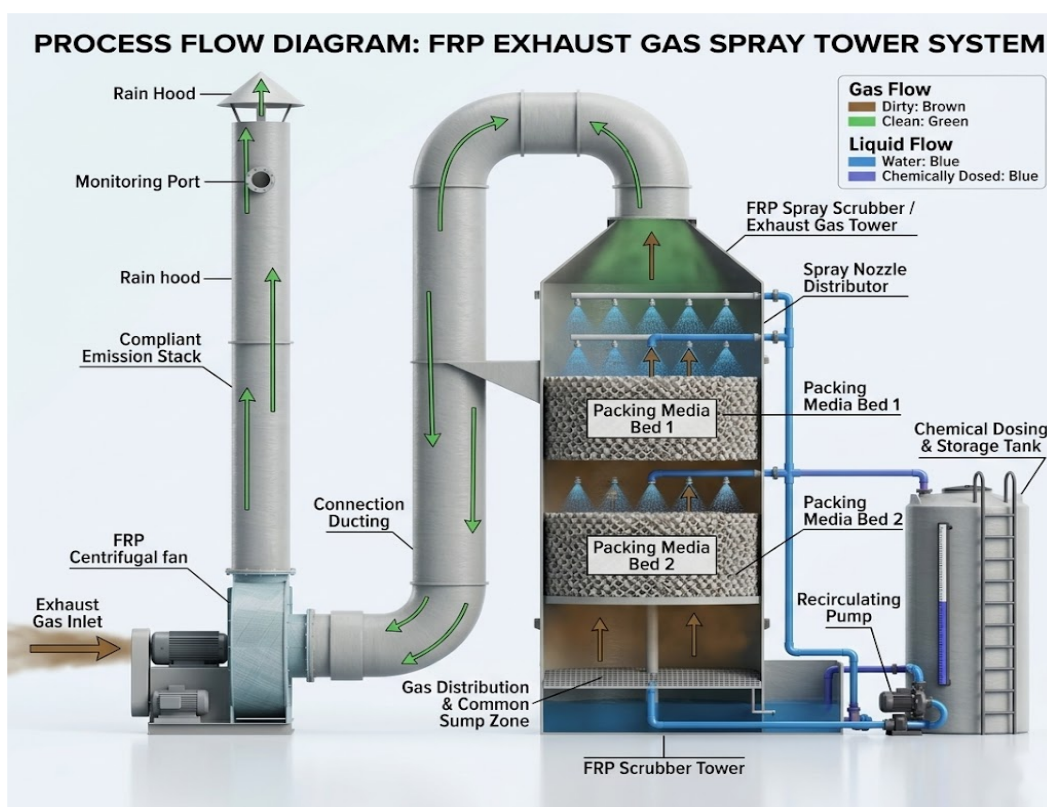
Operation: Polluted gas passes through the filler layer, where it reacts with sprayed liquid (e.g., acid or alkali) to neutralize contaminants. Gas velocity is usually 1 – 6 m/s, adjustable as needed.

Environmental Role: Scrubbers clean exhaust air by spraying liquid that absorbs and neutralizes harmful pollutants through chemical reactions—making them an eco-friendly solution.

Zhengzhou Enviro provides scrubber systems widely used in chemical, pharmaceutical, coating, printing, food, electroplating, and other industries to treat acidic, alkaline, and organic gases such as VOCs, SO, NO, HCl, NH, and formaldehyde.

Advantages

- **Strong Pre-treatment:** Removes dust, paint mist, and moisture—protecting downstream carbon or RCO/ RTO systems.
- **Fast Cooling:** Cools hot exhaust quickly for downstream process compatibility.
- **Low Pressure Drop:** Less energy use than filter-based systems.
- **Easy Maintenance:** Clear design and auto dosing enable trouble-free continuous operation.



Acidic gases, alkaline gases and VOC 's

TECHNOLOGIES

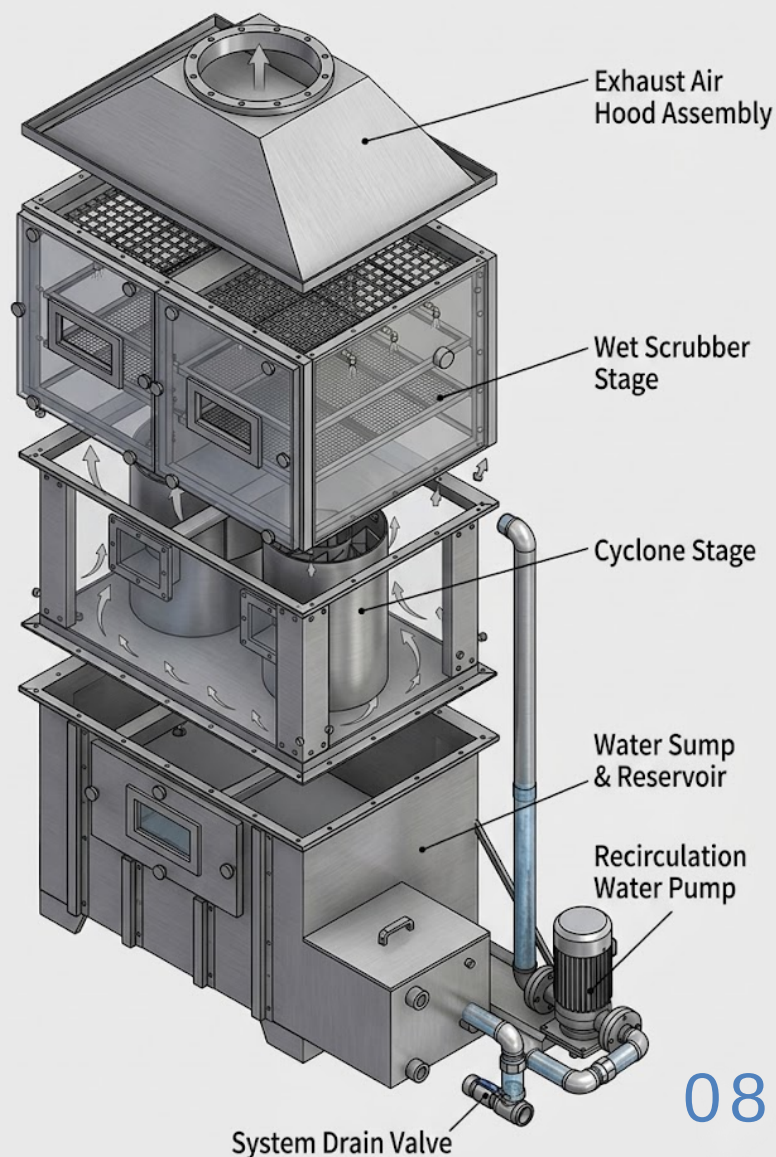
Cyclone Mixed Spray Scrubber

The Cyclone Mixed Spray Tower is an advanced exhaust gas treatment system that integrates cyclone separation and spray absorption technologies. Its innovative structure and functional design are specifically engineered to achieve high-efficiency removal of harmful pollutants from industrial emissions.

Advantages

- **Dual-Technology Efficiency:** Combines cyclone separation and spray absorption to simultaneously remove particulate matter and neutralize harmful gases.
- **Versatile Application:** Effectively treats complex exhaust streams containing dust, acid/alkali gases, and other contaminants.

OPERATING PRINCIPLE OF GAS CYCLONE TOWER



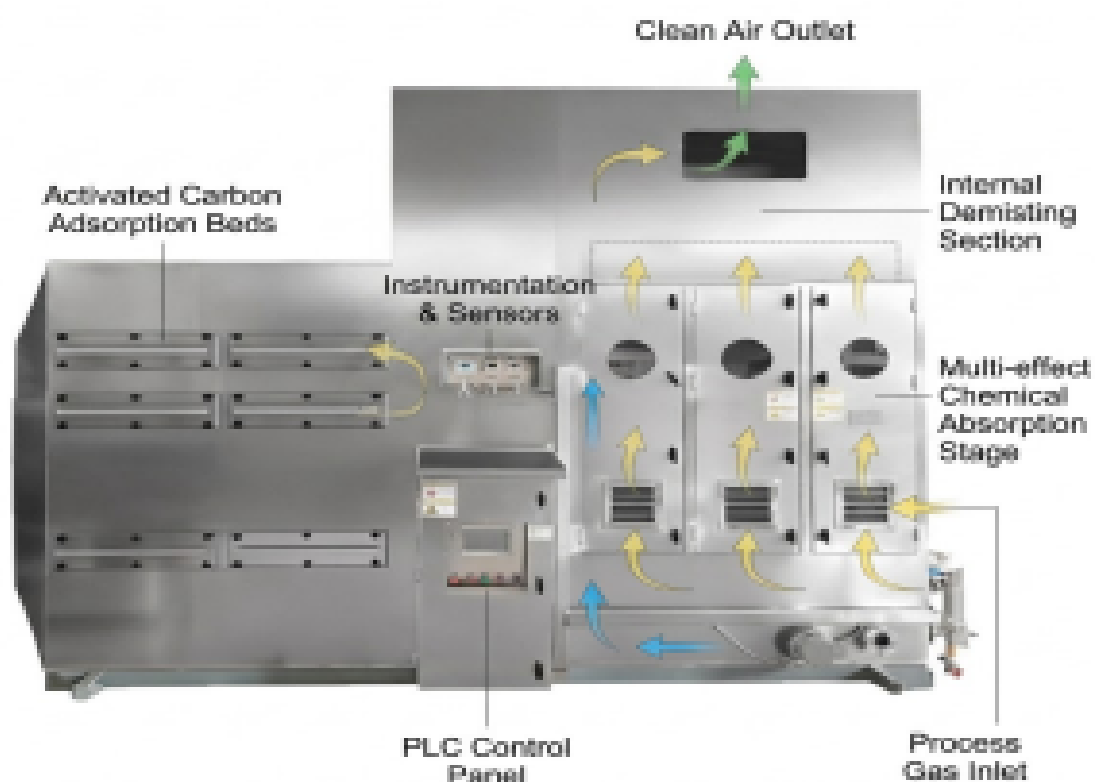
TECHNOLOGIES

Multi-effect Circulating Waste Gas

Zhengzhou enviro has developed an advanced environmental protection device that integrates multiple purification technologies with a multi-cycle treatment mechanism, designed for efficient waste gas purification — particularly suited for industrial and laboratory exhaust with complex components and fluctuating concentrations.

Advantages

- Multi-functional: One unit simultaneously addresses acidic gases, alkaline gases, and VOCs odors.
- Significantly compact footprint: Compared to the traditional separate "spray tower + adsorption box" combination, this integrated cabinet significantly saves industrial space.
- High processing efficiency: The manual states that it improves efficiency by 30%-50% compared to traditional single-pass treatment equipment.
- High cleanliness: The all-stainless steel body has a clean appearance, suitable for laboratory or cleanroom environments.



TECHNOLOGIES

ACTIVATED CARBON FILTERS

Principle: Activated carbon adsorption boxes remove harmful gases, odors, and pollutants via physical adsorption—purifying exhaust air as contaminants stick to the carbon surface.

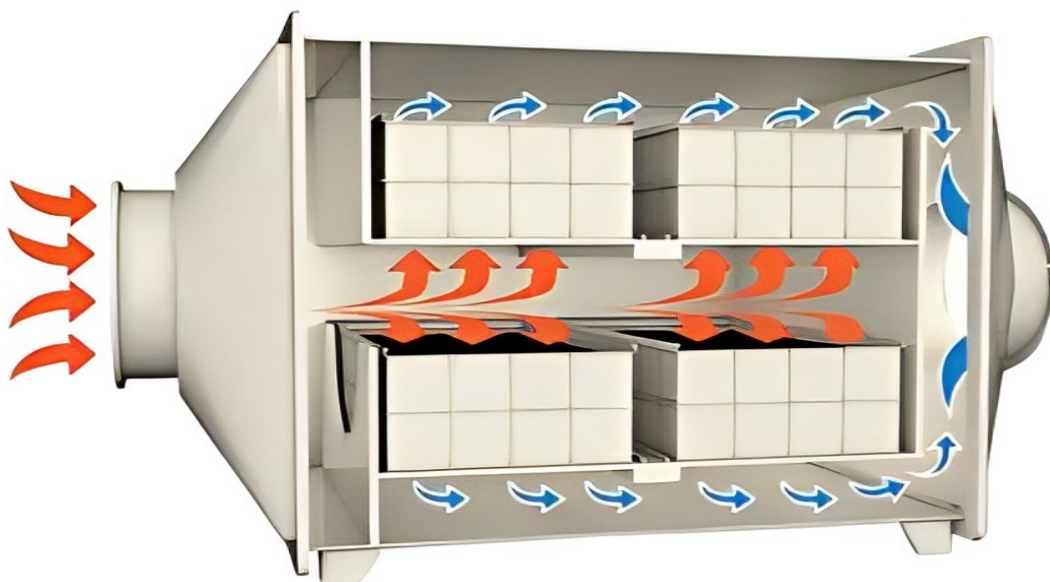
Applications: Used in industrial, lab/medical, and commercial settings (e.g., factories, hospitals, malls, offices) to treat VOCs, smoke, odors, and toxic gases like SO or formaldehyde.

Pre-treatment & Performance: Pre-removes dust, mist, and moisture (e.g., via cyclone); microporous carbon (500–1500 m²/g) captures organics efficiently, enabling clean gas discharge to meet emission standards.

Regeneration & Operation: Saturated carbon can be regenerated (thermal/steam desorption) or replaced—ideal for SMEs due to simple, reliable operation.

Advantages

- **High Adsorption Capacity:** enable >85% removal of VOCs, especially effective for low-concentration, high-volume.
- **Low-Cost & Simple Operation:** Lower CAPEX and simpler design; only periodic pressure checks and carbon replacement needed.
- **Flexible Configuration:** Scalable tower size and bed depth adapt to varying airflow; Cost-Effective for SMEs



ODOR TREATMENT

Industrial odor emissions pose a serious environmental challenge, directly affecting the quality of life in nearby communities and frequently triggering public complaints.

With evolving environmental regulations and the emergence of “zero-odor” zones as a standard, industries—including wastewater treatment facilities, rendering plants, and chemical manufacturers—are under growing pressure to reduce their olfactory impact.

Although improved process management can help limit initial odor generation, the highly volatile nature of compounds like hydrogen sulfide, ammonia, and mercaptans often necessitates dedicated post-treatment solutions.

As a result, deploying advanced odor control technologies—such as chemical scrubbing or activated carbon adsorption—has become essential, not just for regulatory compliance but also for maintaining community trust and operational legitimacy.





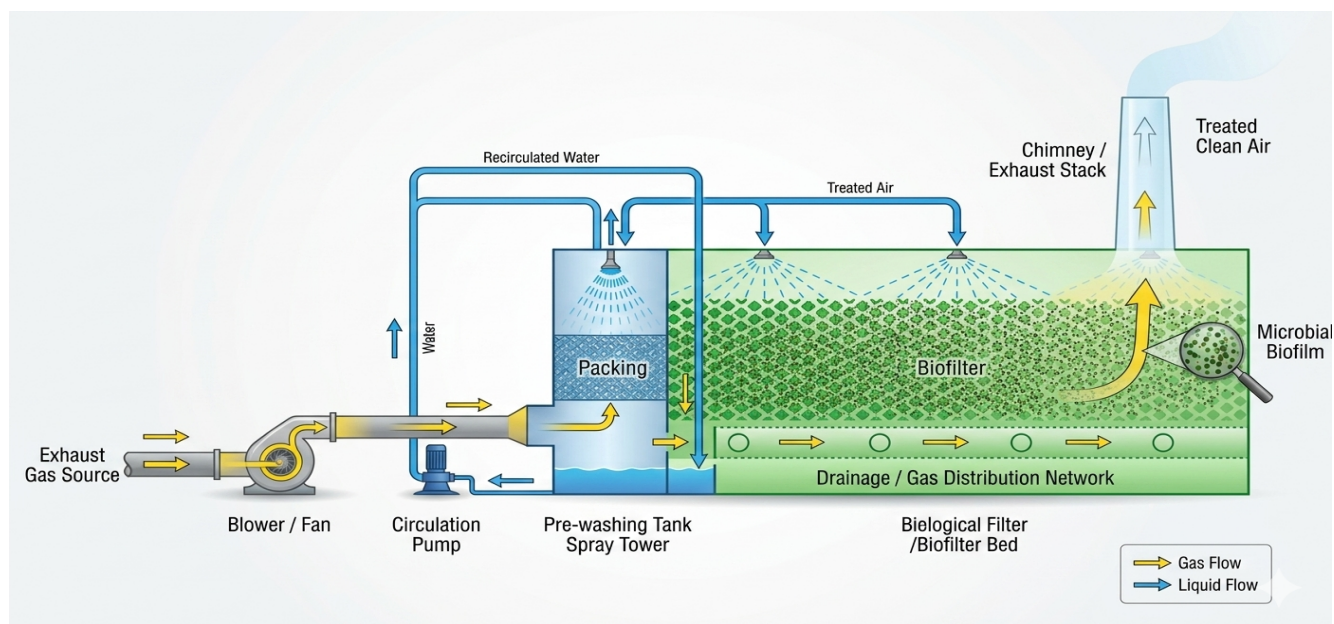
BIOFILTERS

Biological deodorization equipment uses cultured microorganisms on a filler medium to form a biofilm. This biofilm purifies malodorous waste gas by decomposing pollutants into harmless water, carbon dioxide, and microbial biomass through microbial metabolism, effectively removing and controlling odors.

Biochemical treatment outperforms traditional systems (chemical scrubbers, activated carbon, thermal oxidation) with minimal environmental impact—no chemicals consumed, pollutants fully biodegraded (not accumulated), and low energy use. Its simple process also ensures lower operating costs.

Advantages

- High Efficiency: 80-95% removal, no residues
- Low Cost: Minimal energy, simple maintenance
- Adaptable: Handles diverse odors, ideal for large volumes
- Eco-Friendly: Zero harmful byproducts, green compliant





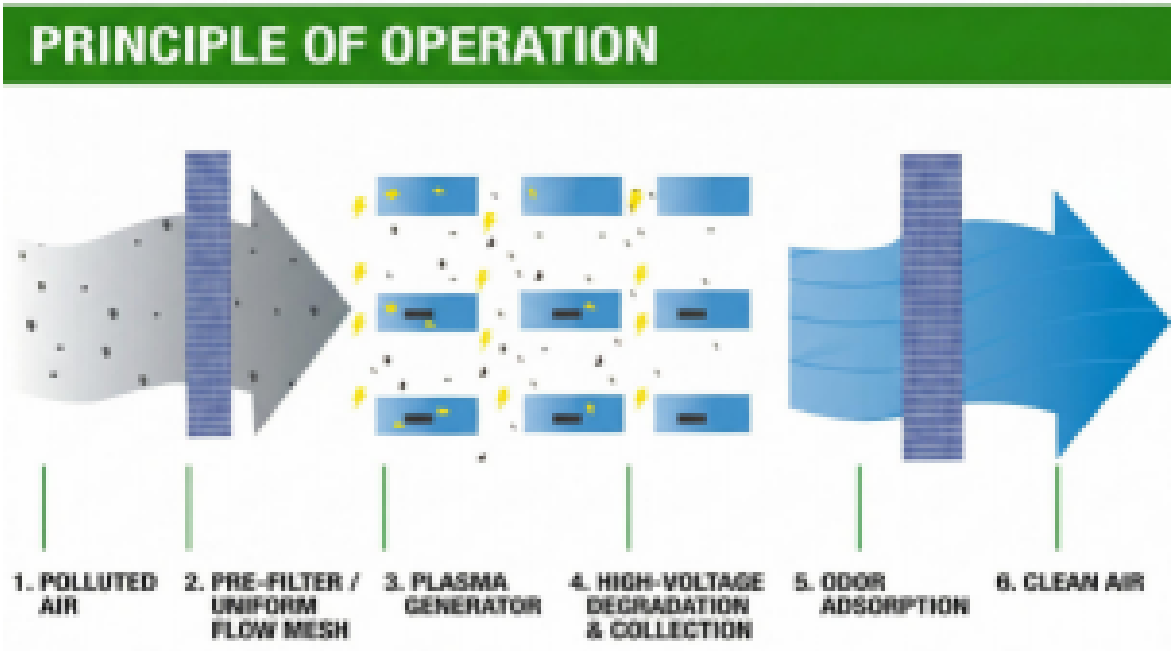
Bipolar Shielded Ionization Technology

DBD (Bipolar Shielded Ionization) Technology:
Uses alternating current discharge to generate magnetized oxygen atom clusters (10–60+ O atoms), highly oxidizing and short-lived (~2.5 h). Effectively purifies, disinfects, and sterilizes air by decomposing VOCs, PM10, bacteria, viruses, and malodors—without UV, ozone, or secondary pollution.

Applications: Widely used in sewage plants, waste ponds, garbage stations, factories (paint, food, pharma, rubber, plastic) farms, slaughterhouses, labs—especially for malodorous and pungent air.

Advantages

- Zero secondary pollution: No UV, ozone, or harmful byproducts (unlike conventional systems).
- Broad-spectrum action: Oxidizes VOCs, PM10, pathogens (bacteria/viruses), and odors effectively.
- Chemical-free operation: No consumables, lowering long-term costs.



Airborne particulate matter treatment

Airborne particulate matter (PM), especially fine and ultrafine particles (PM_{2.5}, PM₁₀), poses severe risks to human health, ecological systems, and industrial operational safety.

Emissions from industrial processes—such as metal smelting, chemical manufacturing, electronics production, and high-temperature processing—often contain complex mixtures of dust, acid/alkali gases, and VOCs, demanding integrated, high-efficiency abatement solutions.

Recognizing this critical challenge, Zhengzhou Enviro has dedicated itself to developing advanced air purification technologies that go beyond conventional single-stage treatment.



TECHNOLOGIES



Pulse Bag Filter

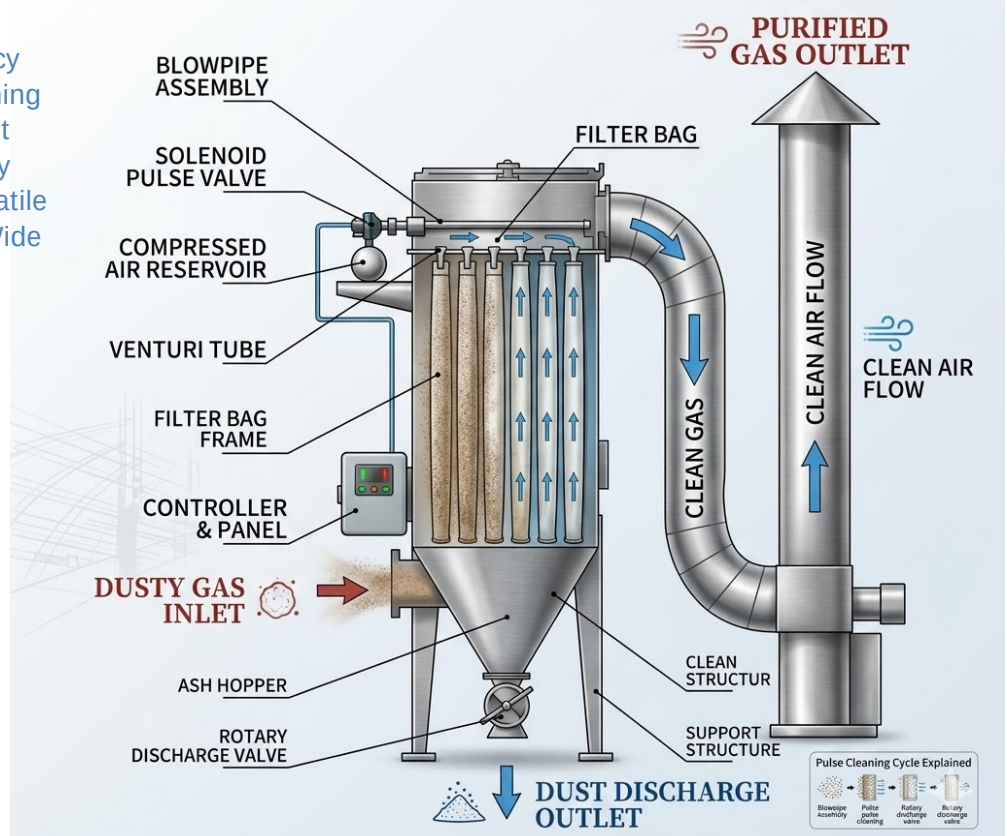
The Pulse Bag Filter is an advanced industrial filtration system designed for high-volume gas streams and high-concentration dust environments.

Featuring high-quality filter media and automated pulse-jet cleaning, it ensures reliable, continuous operation and efficient capture of fine particulates across diverse industrial applications.

Advantages

- Superior Filtration Efficiency
- Intelligent PLC Pulse Cleaning
- Optimized Dust Settlement
- Valuable Material Recovery
- High-Temperature & Versatile
- Performance Modular & Wide Application

OPERATION PRINCIPLE OF BAGHOUSE DUST COLLECTOR





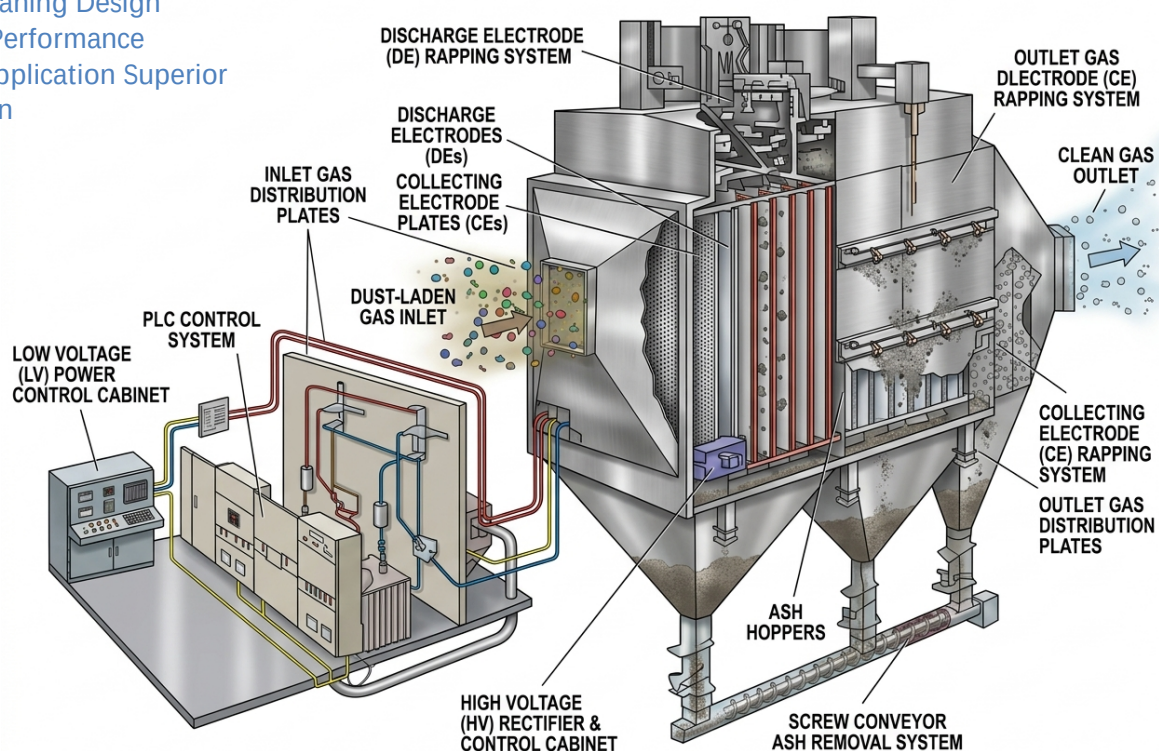
Wet Electrostatic Precipitator (WESP)

The Wet Electrostatic Precipitator (WESP) is a high-efficiency air pollution control system that removes ultra-fine particles, acid mists (HSO, HCl), aerosols, and heavy metals from industrial flue gases.

Using a continuous water film to clean collection electrodes, it prevents dust re-entrainment and maintains stable operation with saturated or sticky exhaust gases, making it ideal for industries requiring ultra-low emission standards.

Advantages

- Corrosion Resistance
- System Integration:
- Self-Cleaning Design
- Stable Performance
- Wide Application Superior
- Filtration





FOR MORE INFORMATION.PLEASE
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www.zonenvir.com