



5S Microbial Air Cleaning System

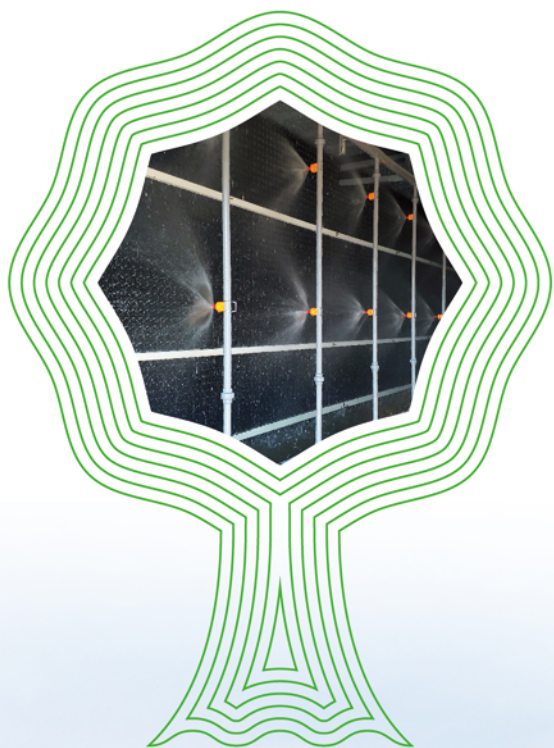
Farm Deodorization system

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Farm AirClean

Make animal living environments healthier

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With the rapid development of intensive breeding technology, based on the higher demand for improving production capacity, breeding owners usually pay more attention to systems and equipment closely related to production capacity, such as air epidemic prevention, feed preparation, feeding, intelligent equipment, etc., often ignoring environmental protection issues such as pig farm deodorization.

According to reports, about 10% of residents in high-yield areas of Nordic countries report encountering odor problems at least once a year. The motivation for deodorization work is only to reduce the odor disturbance generated by pig farms in densely populated areas, until environmental regulations become increasingly perfect and strict. Reducing ammonia emissions, controlling dust, and improving air quality around farms have all become details of increasingly strict regulations. Similarly, in China, deodorization of pig farms has become an unavoidable issue for farmers.

The "5S Microbial Air Cleaning System" of Wusen Environmental Control is an intensive air purification device for animal husbandry, which can use chemical purification or biological purification methods to carry out organized water washing and purification treatment of odor. Tailored services are provided for different areas of breeding farms. The pig farm air cleaning system consists of drip fillers, sprinkler systems, control systems, filtration systems, and dosing systems. The deodorization equipment adopts a modular design, which can be quickly installed on site.

Wusen aims to "make animal living environments healthier", never tire of it, adhere to quality, continuously innovate, and live up to every trust!

PERFECT QUALITY WORLD SHARING

Continuously creating value
for global users



5S FARM AIR CLEANING SYSTEM



WUSEN 5S FARM AIR CLEANING SYSTEM

MAKE ANIMAL LIVING ENVIRONMENTS HEALTHIER

Deodorization system gutter

Quick on-site installation and convenient construction

On site installation is fast, construction is very convenient, and at the same time, it saves shipping costs, time, and effort. Compared with infrastructure construction, it can move quickly, is not easy to waste, and saves construction costs.

New raw materials

Acid and alkali resistant, resistant to the erosion of various chemicals, no need to worry about corrosion during use.

Fine workmanship, resistant to impact and impact

PE deodorizing gutter has bending resistance and strong impact toughness, which is not easy to break or damage.

Save construction costs

Compared to brick masonry and concrete pouring water collection tanks, it greatly reduces labor costs and can save about 2-3 times labor costs.

5S FARM AIR CLEANING SYSTEM



Drip flow grid packing

Drip packing is a filter material specifically used in the field of aquaculture, made of copolymer PP, which is resistant to aging, easy to clean, has a long service life, and has good gas-liquid distribution.



Spray system

After being transported by stainless steel centrifugal pump, it will reach the spray terminal/nozzle through PVC pipe, and the water vapor will be sprayed out through the spiral nozzle under pressure and evenly sprayed to the trickle packing, so as to remove ammonia in the air.



Dosing System

At the same time as the water pressure is released by the dosing system, the liquid deodorant loaded at the bottom of the container is added to the circulation system through the dosing pump.



Filtered sewage system

After impurities enter the circulating water tank, they are filtered through primary filters such as brushes and filters to settle in the sedimentation tank. They are then discharged through the sewage system to replenish clean water quality and ensure stable operation of the equipment.

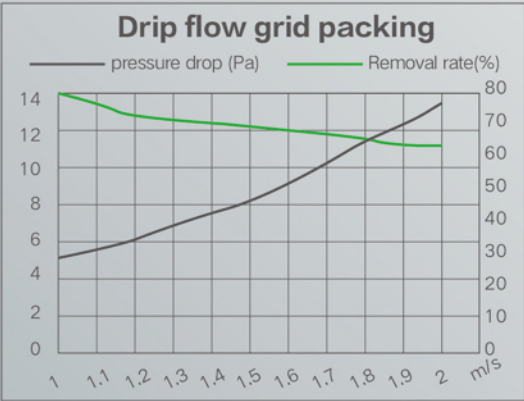


control system

The power electronic equipment used for gas emission filtration in poultry and livestock houses will automatically control the deodorization equipment for odor filtration, achieving the goal of energy conservation and efficiency.



Wusen specialized drip flow grid packing (pressure drop/removal rate test)



wind speed(m/s)	pressure drop(pa)	Removal rate(%)
1	5.05	78.87
1.1	5.49	77.03
1.2	6.13	75.65
1.3	6.68	73.43
1.4	7.42	71.21
1.5	8.31	70.16
1.6	9.18	68.68
1.7	10.22	66.54
1.8	11.41	64.89
1.9	12.53	63.21
2	13.35	62.53

The filter bed is composed of Wusen's dedicated PP drip flow grid packing, with a gas-liquid ratio of 0.1-0.3L/m³ and a thickness of 450mm, fully ensuring the time for gas-liquid exchange. The void fraction of the drip flow grid filler is as high as 97%, and the pressure drop is between 8-14Pa when passing through the curtain at a wind speed of 1.5-2m/s.

Deodorization & sterilization

CDOR COMPONENT & PROCESS FLOW



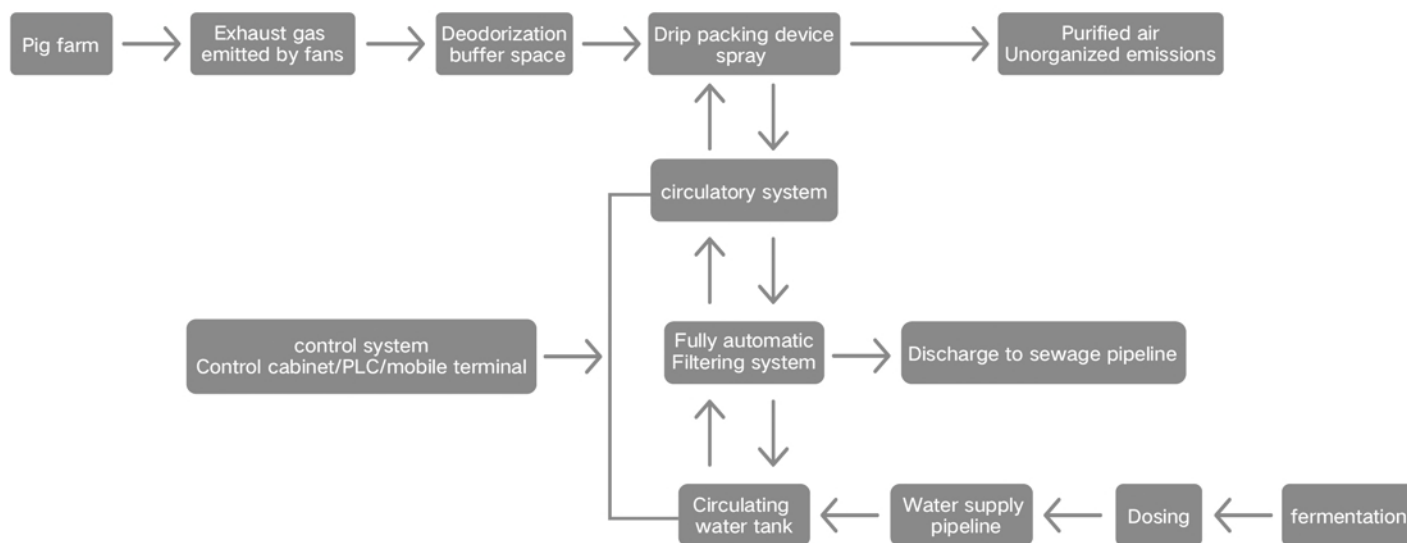
In order to block the spread of pathogenic microorganisms, modern intensive livestock and poultry breeding adopts enclosed farms, and the inlet and outlet gases are controlled and regulated by power devices. The entire air filtration system includes front-end intake filtration and back-end exhaust gas emission purification.

The deodorization of pig farms refers to the purification of exhaust gas emissions from the rear end. Intensive breeding farms have a large population of breeding organisms, resulting in a large and complex odor. According to research, there are more than 200 types of foul odors produced in pig manure, among which the largest are NH_3 , H_2S , and VFA (volatile fatty acids). These harmful gases not only harm human physical and mental health, but also have a serious impact on the growth of breeding organisms, easily causing them to become restless, reduce their feed intake, weaken their physical fitness, and even trigger respiratory diseases, death, and other risks.

In addition, with the comprehensive supervision of multiple environmental regulations such as the Environmental Impact Assessment Law and the Air Pollution Prevention and Control Law, it is imperative to do a good job in the distribution and treatment of waste gas from breeding sites.



Process flow diagram of air cleaning system



Reference values for odor gas indicators in different pig farms

Number	Pig farm type	NH_3 / (mg/m^3)	H_2S / (mg/m^3)	CO_2 / (mg/m^3)	Dust/ (mg/m^3)
1	Pig breeding farm	25	10	1500	1.5
2	Empty and Pregnant Mother Pig farm	25	10	1500	1.5
3	Nursing mother pig farm	20	8	1200	1.2
4	Conservation pig farm	20	8	1200	1.2
5	Growing and fattening pig farm	25	10	1500	1.5

PP DROPLET GRID FILLER



Whether the air cleaning system can work stably and efficiently is closely related to the filling material, and its core lies in several aspects such as whether the structural design is reasonable, the characteristics of raw materials, and the maturity of processing technology.

Core features



The polygonal structure is both hydrophobic and breathable

After thousands of tests, the filler structure ultimately adopts an overlapping polygonal structure, which has good hydrophobicity, moisture retention, breathability and other characteristics.



Polymer materials have stable properties and good flame retardancy

The raw material adopts high-strength copolymer PP polymer material, which has the characteristics of aging resistance, acid and alkali resistance, corrosion resistance, and flame retardancy.



Made by one-time stamping, with a sturdy structure

Using advanced injection molding machines, it is made by one-time high-temperature stamping, with a sturdy structure, strong pressure resistance, smooth surface, and easy cleaning.

Three fire protection levels :



V0 level flame retardant material



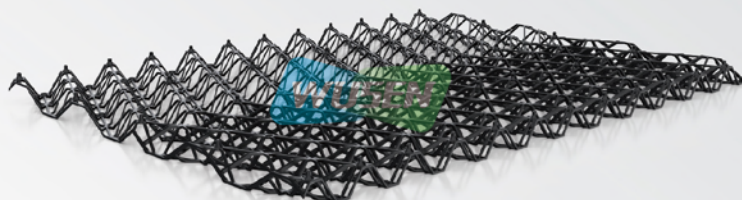
V2 level flame retardant material



Ordinary PP material

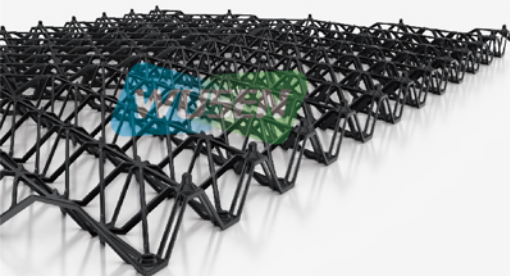
Each piece is made of carefully selected ingredients

New raw materials, no use of secondary recycled materials



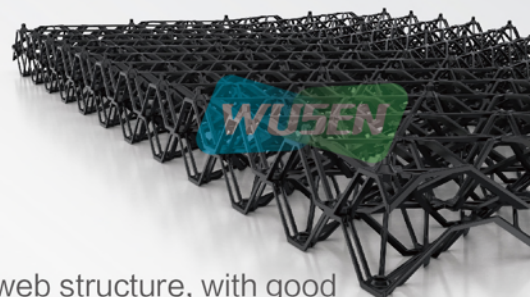
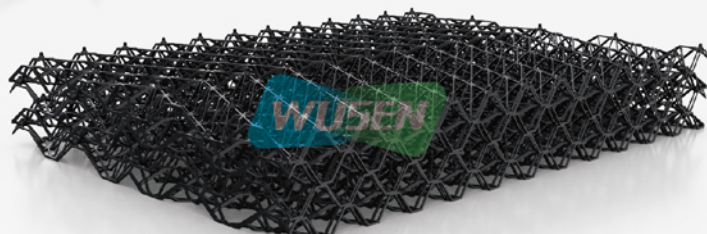
Exclusive mold for easy splicing

Adequate production and inventory to meet the construction schedule



Stacked splicing

Multiple fold increase in air contact area



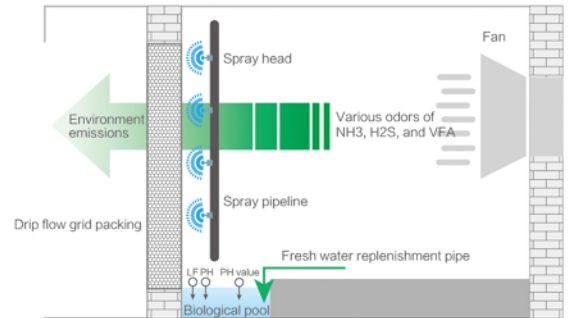
Spider web structure, with good hydrophobicity but no leakage

Maximizing the contact surface while ensuring exhaust volume

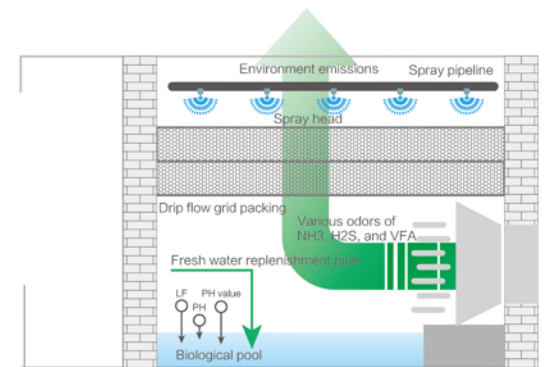
TECHNICAL PARAMETER

Project name	Parameter
Material	Polypropylene raw materials
Overall height	Height: 600mm and 908mm
Assembly requirements	Snap fit assembly
Finished product specifications	Thickness: 450mm, any width component
Density	21.3kg/m ³
Working temperature	-40°C~90°C
Working humidity	Humidity has no effect
Yield stress	35.73
Heating change rate	< 0.2%
Vicat softening temperature	148°C
Heat resistance	112°C No embrittlement within 24 hours
Flame retardancy	V0 level、V2 level、non flammable
Falling hammer impact	6.86/7.61
Water passage method	Sloping channel with splashing droplets
Channel width	20mm
Specific surface area	125m ² /m ³
Porosity	> 97%
Gas-liquid ratio	0.1-0.3L/m ³ , 1.5m/s wind speed < 15Pa
Service life	>20 years

Air cleaning mode



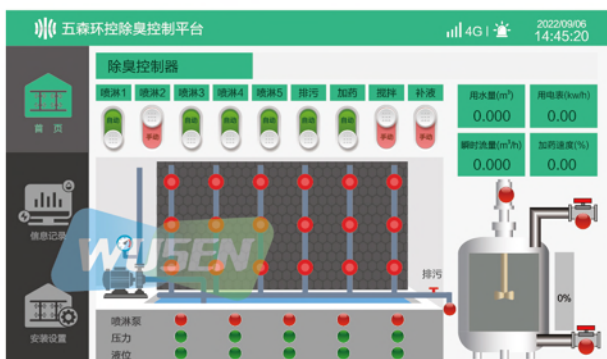
Schematic diagram of horizontal ventilation deodorization mode



Schematic diagram of vertical ventilation deodorization mode

Control system

The fully intelligent air cleaning control system independently developed by Wusen enables remote control and real-time observation of the operation of the entire deodorization system, achieving intelligent deodorization control and making equipment and enterprise intelligence simple and easy to implement.

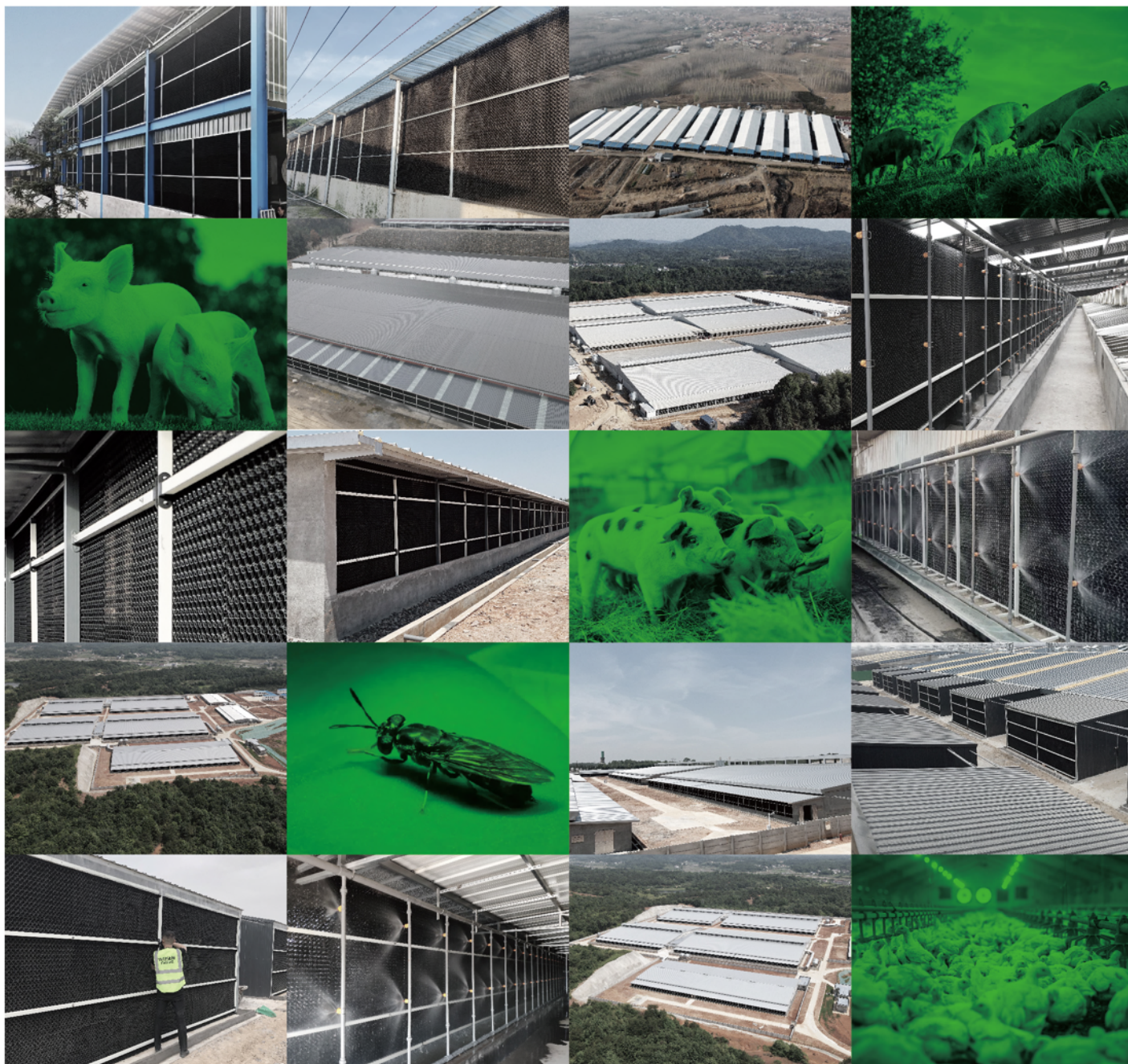


PLC controller homepage



Controller mobile app interface

EXCELLENT ENGINEERING CASES



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