



MANUFACTURER  
OF MODERN  
LIVESTOCK BREEDING  
EQUIPMENT

现代化畜牧养殖设备制造商

MADE IN CHINA



**SHANDONG WUSEN ENVIRONMENTAL CONTROL EQUIPMENT TECHNOLOGY CO., LTD.**

📍 Add: East of Rongli Street, Qingzhou Economic Development Zone,  
Shandong Province, China

📞 Whatsapp:+86 156.5367.5558 📱 Mobile:(86)156.8989.5555 🌐 <http://www.wusencn.com>

**WUSEN**  
**五森环控**

FOCUS ON ANIMAL HUSBANDRY EQUIPMENT  
MANUFACTURING AND  
SYSTEM SOLUTIONS

专注畜牧业设备制造与系统解决方案

**LIVE UP  
TO EVERY TRUST**

不负每一份信任

# ABOUT US

Shandong Wusen Environmental Control is engaged in the research and development, manufacturing, engineering design, construction and installation of the automatic environmental ventilation equipment and environmental protection equipment for animal husbandry and breeding, to provide greater value for customers' continuous technological innovation. The company's main products are transparent shutter, heat preservation shutter, butterfly ceiling ventilation window, all-round suspended ceiling ventilation window, chicken house ventilation window, sidewall ventilation window, automatic enabling ventilation window, powerless ventilation window, plastic wet curtain, breeding waste gas deodorization wet curtain, FRP fan, fan hood, etc.

The company has many years' experience in the R&D and a perfect after-sales service system. The independent product R&D and design department of the company is able to carry out the research and development of the new product, new technologies and new processes on the new trend of the international industry. The company's sales and after-sales service network are all over the country and the products have been exported to many countries and regions.

Shandong Wusen takes "live up to every trust" as its mission. Facing the increasingly fierce international challenges from the industry, Wusen Environmental Control will keep forging ahead and keep pace with the times. In an era when the aquaculture is developing fast in a large scale, all the members in Wusen will spare no effort to provide more comprehensive equipment guarantee for the development of animal husbandry.



INVESTMENT  
5000万

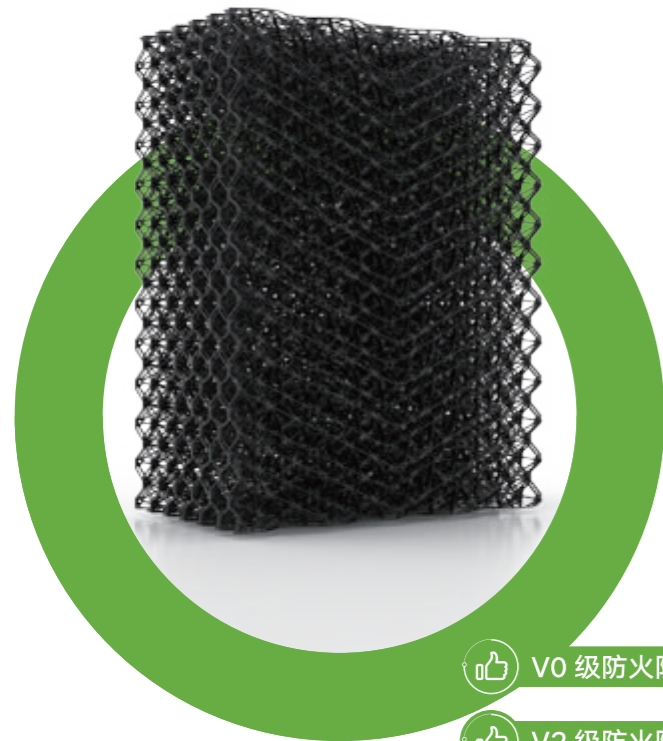
AREA COVERED  
20000m<sup>2</sup>

STAFF  
100+

ANNUAL CAPACITY  
40000套



# GRID DEODORIZATION FILTER MATERIAL



- V0 级防火阻燃料
- V2 级防火阻燃料
- 普通 PP 料

Three levels are available:

## WUSEN Deodorizing filter material

Whether the deodorization system can work stably and efficiently is closely related to the filter material. Its core lies in whether the structure design is reasonable, the characteristics of raw materials, and the maturity of processing technology.

### Core features

#### The multilateral structure is both hydrophobic and breathable

After thousands of tests, the filter material structure finally adopts the superimposed multilateral structure, which has good hydrophobicity, moisture retention, air permeability and other characteristics.

#### Stable performance of polymer materials

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

#### Made by one-time stamping

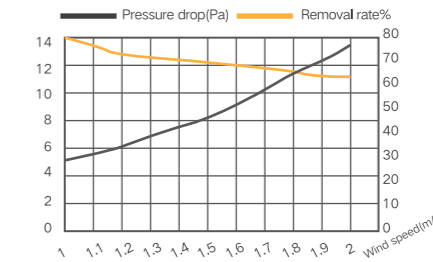
It is made by using advanced stamping machine and one-time high temperature stamping, with solid structure, strong pressure resistance, smooth surface and easy cleaning.

## Technical Parameter

ENTRY NAME	PARAMETER
texture of material	PP raw materials
Monolithic height	height:600mm and 908mm
Assembly requirements	Clip assembly in place
Forming specification	thick:450mm Any width assembly
density	21.3kg/m <sup>3</sup>
Operating temperature	-40° C-90° C
Operating 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 级
Drop hammer impact	6.86/7.61
By	Inclined channel splash
Channel width	20mm
Specific surface area	125m <sup>2</sup> /m <sup>3</sup>
porosity	大于 97%
Gas-liquid ratio	0.1-0.3L/m <sup>3</sup> , 1.5m/s wind speed < 15Pa
service life	> 20 年

## Pressure drop/removal rate test

### Grid deodorization filter material



风速 m/s	压降 pa	去除率 %
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 gas-liquid ratio of the filter bed composed of the PP mesh deodorizing filter material for Wusen Environmental Control is 0.1-0.3L/m<sup>3</sup>, and the thickness is 450mm, which fully guarantees the gas-liquid exchange time. The porosity of the grid filter material is up to 97%, the pressure drop is between 8-14 Pa when the wind speed is 1.5-2 m/s, and the odor removal rate can reach more than 62%.

### Each piece is the best material

Eliminate secondary recovery of pure raw materials

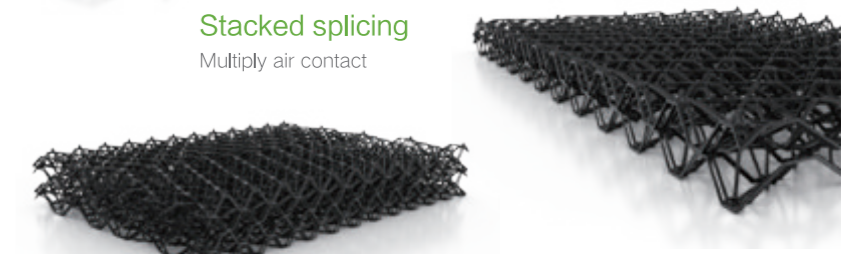


### Exclusive mold easy link

Sufficient productivity

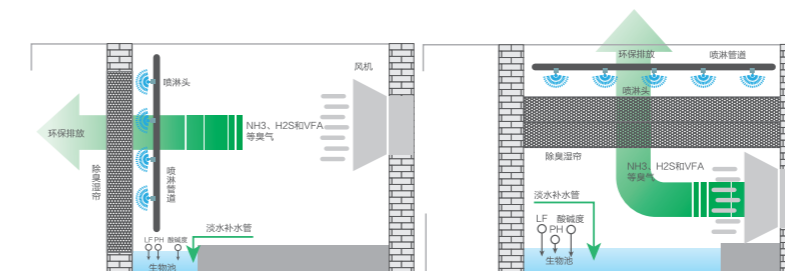
### Stacked splicing

Multiply air contact



### The spider web structure is sparse but not leaky

Maximize the contact surface while ensuring the exhaust volume





# PLASTIC COOLING PAD

## Innovation Technology Drives Change

Wusen plastic cooling pad has the function of cooling and dust removal, which can replace the traditional paper cooling wet curtain. Optional stainless steel frame and aluminum alloy frame. Aluminum alloy deep sink, PVC deep sink. Large water circulation volume, rapid cooling, uniform water distribution, easy cleaning and not easy to block. The service life in normal environment can reach more than 10 years. Compared with paper water curtain, the cost of replacing water curtain is greatly reduced.

## Use of high-quality plastic pads

We recommend using our high-quality plastic pads. Compared to cellulose pads, they have the following advantages:

- ✓ the pads can be cleaned thoroughly with a high-pressure cleaner;
- ✓ their life span is significantly longer;
- ✓ water consumption is lower, i.e. humidity in the barn does not increase too much;
- ✓ the climate computer ViperTouch controls the temperature very exactly: absolutely precise cooling!



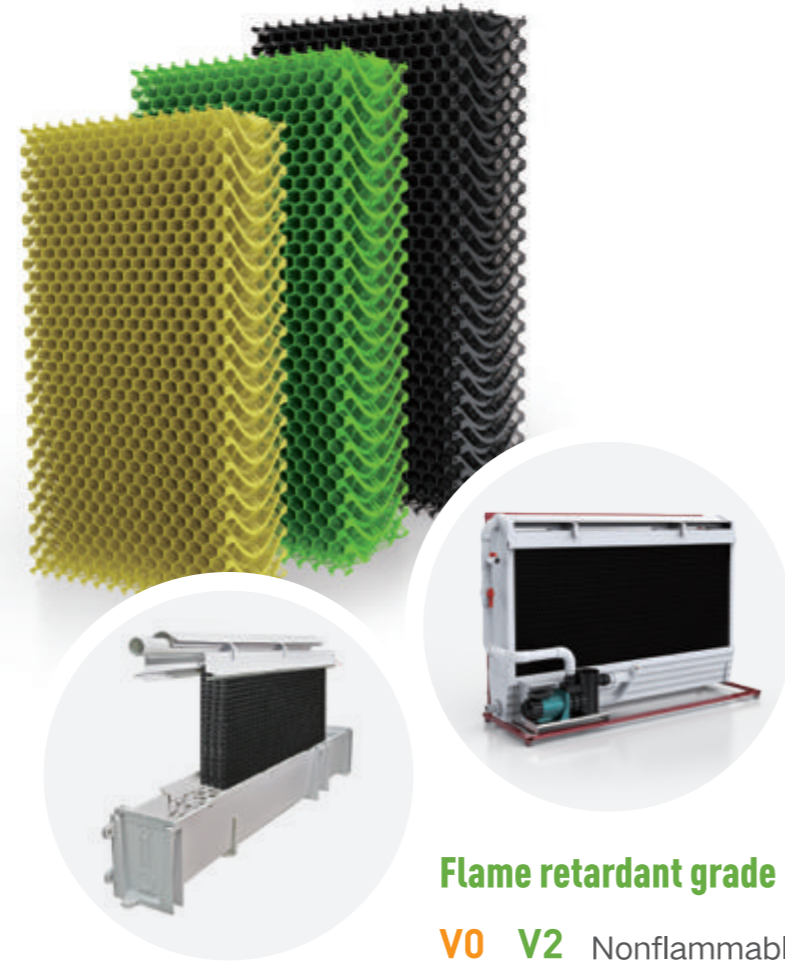
Stainless steel frame



Aluminum alloy frame



PVC deep water tank  
Aluminum alloy deep water tank



Flame retardant grade

V0 V2 Nonflammable

## Specifications

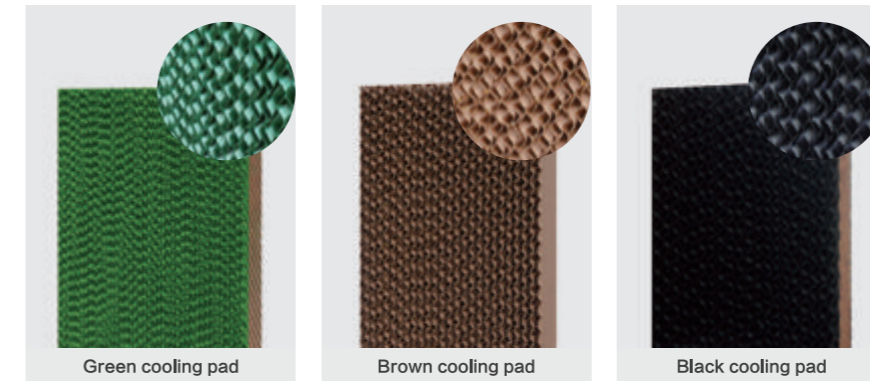
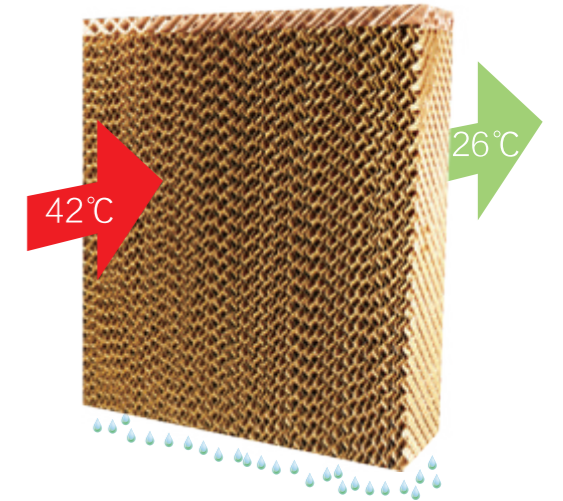
Plastic cooling pad thickness 150mm  
The area of the plastic cooling pad is customized according to the actual installation needs, It can be made to any size.

The specifications of plastic cooling pad without frame are as follows:

600mm*150mm	900mm*150mm	1200mm*150mm
1500mm*150mm	1800mm*150mm	2100mm*150mm

# EVAPORATIVE COOLING PAD

Special treatment of corrugated paper, high structural strength, corrosion resistance, long service life; With excellent penetrability and water absorption, it can ensure that the water evenly penetrates the entire wet curtain wall; The specific three-dimensional space structure provides the largest evaporation surface area for the heat exchange between water and air; The outer frame is available with aluminum alloy and galvanized sheet. The cooling process of the DLF wet curtain cooling system is completed in the base core-DLF paper pad. There is a thin water film on the surface of the corrugated fiber paper. When the outdoor dry hot air is sucked by the fan through the paper pad, the water on the membrane will absorb the heat in the air and evaporate in the water vapor, so that the cool and humid air after treatment will enter the room. This natural process is like wind blowing across the water. "Wet curtain-fan" longitudinal ventilation cooling combination is the most economical and effective greenhouse cooling measures in summer.



Green cooling pad

Brown cooling pad

Black cooling pad

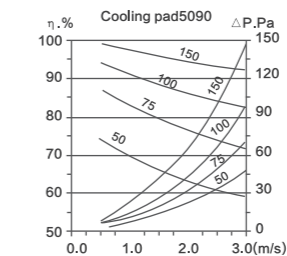
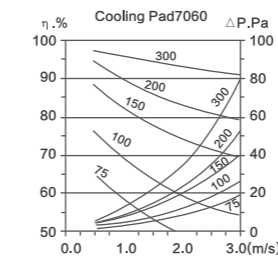
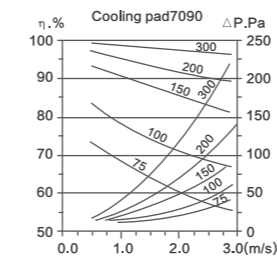


Integrated deep water tank cooling pad



Aluminum alloy frame cooling pad

## Performance





# BUTTERFLY AIR INLET

The frame is made of high-quality ABS engineering plastic, and the side and flip plates are made of PVC plastic steel, which is UV resistant, anti-aging and durable.

The new design ensures a better user experience with double door opening at the same time, which can be adjusted for opening or closing as the air volume might be needed.

The high-quality insulation layer is especially added, which can keep the best state at opening and closing; if insulation is needed, it can effectively prevent the heat emission. Its insulation effect is better when it is sealed tightly.

It can be controlled automatically or manually.

It is suitable for workshops, greenhouses and large-scale livestock breeding places.



## Technical Parameter

OUTLINE DIMENSIONS (MM)	INSTALLATION DIMENSIONS (MM)	MAXIMUM VENTILATION (M <sup>3</sup> /H)
730*560*160	680*500	4100
800*560*160	750*500	4528
1210*560*160	1160*500	7300

# CEILING FOUR-SIDE AIR INLET

The window for animal husbandry is for ventilating from all around, which will automatically open as the change of the pressure.

Materials: The outer frame is made of high-quality PP plastic injection molding, which has strong impact resistance; the shutters are made of PVC plastic extrusion; and the inner foam insulation board has good insulation performance.

Advantages: the indoor temperature can be maintained for a long time and the indoor air circulation can be significantly changed. It resists the high temperature, severe cold and high strength, and is convenient for installation. It is installed at the roof, ensuring an obvious ventilation effect and guaranteeing a long service life. The air is induced from 4 sides, and the thickness of the foam board is 20mm.



## Technical Parameter

PRODUCT NAME	OUTLINE DIMENSIONS (MM)	INSTALLATION DIMENSIONS (MM)	MAXIMUM VENTILATION (M <sup>3</sup> /H)
Four sides	790*790*213	660*660	5553
Two sides	815*330*213	760*260	2519

# LOUVER AIR INLET

The frame and shutter are PVC with a thickness of 10mm and a width of 50mm; The counterweight plate is flat steel galvanized, with a thickness of 8mm and a width of 40mm. The length is determined according to the height of the shutter; Outer frame PVC;

The fan leaf is composed of PVC frame and sunlight plate. The width of the blade is 163 mm and the thickness is 20 mm. Each fan leaf has a sealing strip made of rubber; The handle of fan leaf is made of ABS; Material of tension spring of accessories: stainless steel;

6 shutter leaves, standard configuration (2 counterweights, 1 tension spring), opening requires 60N tension, and the stroke is 18cm.



## Technical Parameter

NUMBER OF LAYERS	5 FLOORS	6 FLOORS	7 FLOORS	8 FLOORS	9 FLOORS
Corresponding height	874mm	1037mm	1200mm	1363mm	1526mm

Remarks: 1. This size is the inner frame size. If it is larger than the above size, it is necessary to add an inactive leaf on the top of the shutter.  
2. The hole size shall be 10mm larger than the inner frame size.

# AUTOMATIC OPENING OF SIDEWALL AIR INLET

The window can be closed or opening very sensitively and conveniently while detecting the change of pressure to maintain the indoor and outdoor pressure difference (the automatic opening pressure can be freely adjusted) and make the external strong light soft. The plate is selected from the domestic famous brands, which has a good light transmission and is not easy to deform. The rotating shaft is made of solid stainless steel round bar, which is stable and reliable for opening and closing. The pull-type opening parts can be added to control the opening and closing by the winch. There are various sizes to be customized as it might be needed by the customer.

1. The frame PVC, fan leaf solar panel, and solar panel adopt domestic famous brands; The others are ABS, and the counterweight is sprayed plastic (iron);
2. Transparent sunlight plate, stainless steel rotary shaft, automatic opening of negative pressure, adjustable opening, and customizable size;
3. The maximum customized size: High:1680mm Wide:1600mm



## Technical Parameter

NUMBER OF AIR INLET LAYERS	CORRESPONDING HEIGHT (MM)
3 layer	840
4 layer	1120
5 layer	1400
6 layer	1680



# POULTRY SIDEWALL AIR INLET

The multi-layer sidewall air inlet is made of PVC plastic steel, with high strength, strong toughness, anti-aging, no deformation at high and low temperatures, and long service life; It is sensitive and convenient to open and close, with large ventilation capacity, quiet and reliable to open and close, without disturbing livestock and poultry, and can be used for ventilation of the side wall of the pighouse.



**High strength toughness**



**Strong aging resistance**



**Tight sealing flexible opening**



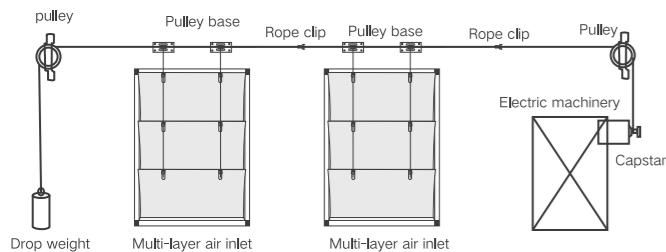
**Quiet and reliable opening and closing**



## Technical Parameter

NUMBER OF AIR INLET LAYERS	OVERALL DIMENSION (MM)	INSTALLATION DIMENSION (MM)
1 layer	500	400
3 layer	1270	1170
4 layer	1670	1570
5 layer	2070	1970

Remarks: 1. The size is fixed height size, and the width can be customized as required.  
2. The hole size is 10mm larger than the installation size.



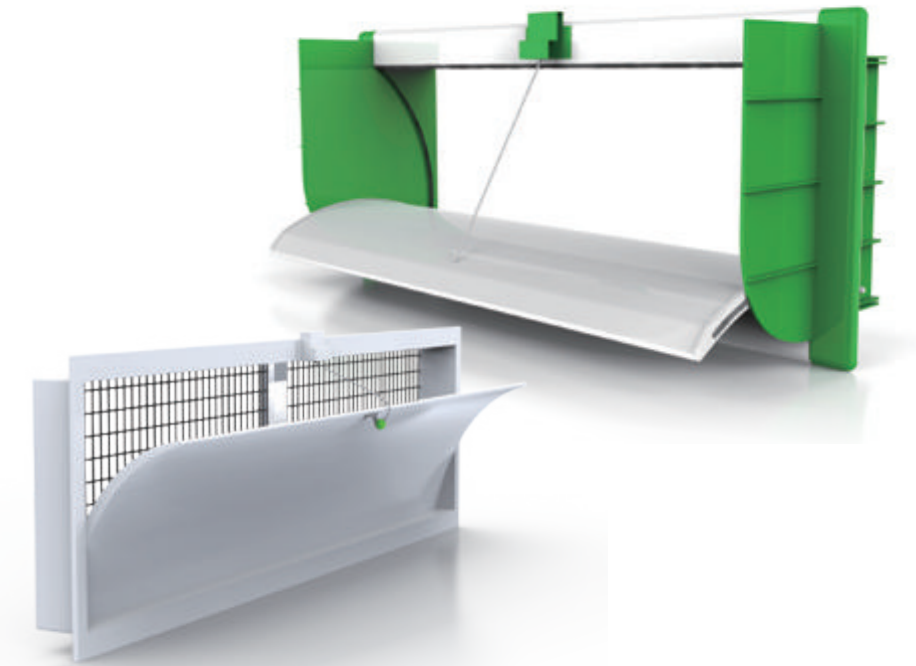
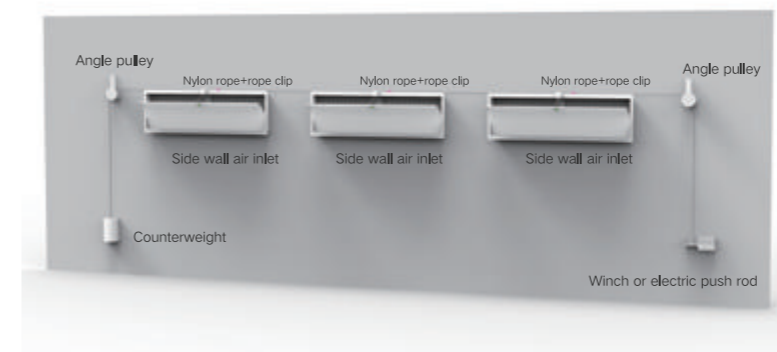
## Installation diagram

# SIDE WALL AIR INLET

The side wall ventilation window is made of PVC plastic material, with high strength, strong toughness, anti-aging, no deformation at high and low temperatures, and long service life; It is sensitive and convenient to open and close, with large ventilation capacity, quiet and reliable to open and close, without disturbing livestock and poultry, and can be used for ventilation of the side wall of livestock and poultry houses.

## Product features

- The fan leaf is PVC, and the outer frame is PVC;
- ABS of baffles and pulleys on both sides;
- Bird net PP, fixed support stainless steel; Plug ABS, screw stainless steel or nylon;
- The side opening installation is flexible and convenient, the air volume can be selected at will, and the size can be customized.



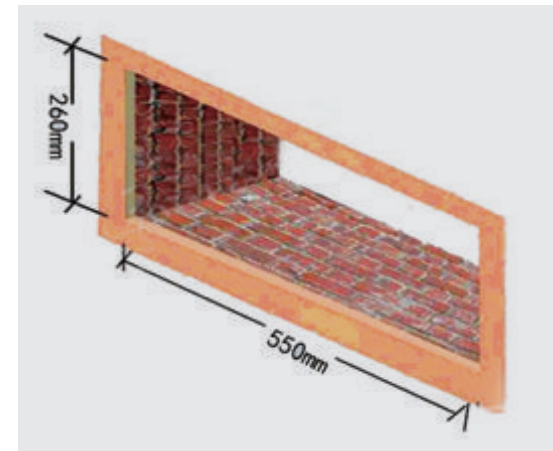
## Technical Parameter

	OUTLINE DIMENSIONS (MM)	INSTALLATION DIMENSIONS (MM)
Type 1	730*365*110	680*335
	800*365*110	750*335
	930*365*110	880*335
	1200*365*110	1150*335
Type 2	730*490*120	700*390
	800*490*120	800*390
	1000*490*120	1000*390
	1200*490*120	1200*390

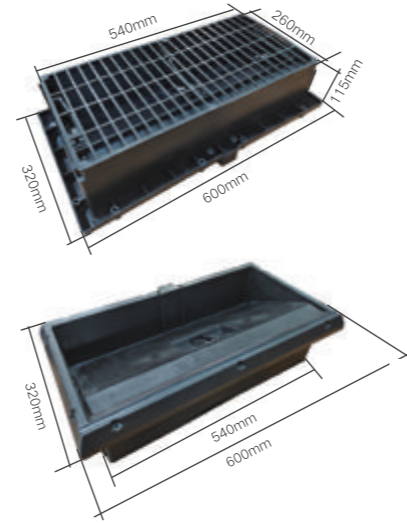


# WALL AIR INLET

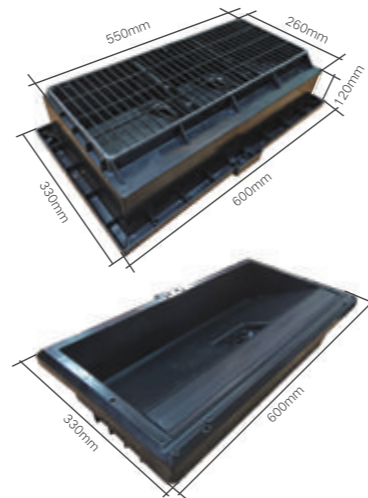
1. Two different materials: PP material, breathable and fast cooling; ABS material, thickened plate, high cost performance;
2. Install protective net to effectively prevent the invasion of insects and birds, ensure sufficient dryness and freshness, smooth air circulation, and ensure internal comfort and safety;
3. Strong wind, no muggy;
4. Tight closure, reasonable structure and flexible opening.
5. Can be equipped with deflector and light shield.
6. WS-2 Special design for the air inlet top and edge for better sealing when it is closed.



## WS-1 Wall Air Inlet



## WS-2 Wall Air Inlet



# PLASTIC FAN

1. One-piece PE housing, more anti-aged, anti-corrosion, the working life can reach up to 20 years .
2. Efficiency ratio more than 85%, collocate with energy efficiency management software ,reduce about 70% consumption, and reduce the running cost .
3. High reliability ,good stability, lower noise, easy maintainance.
4. Communication mode: RS485, 0-10V analog signal .
5. Protection: IP55, Running well at bad environment.
6. Operating environment: -40-60°C, Relative humidity: 0-95%.
7. Easy instalation: Save the link procedure between the speed controller and the madter controller. Also can save the materials and time .



## Technical Parameter

MODEL	POWER	AIR FLOW	VOLTAGE	OPENING SIZE (MM)
18inches – direct drive	0.37kw	7000m3/h	380V	565*565mm
24inches – direct drive	0.55kw	12500m3/h	380V	780*780mm
36inches – direct drive	0.75kw	24100m3/h	380V	1175*1175mm
51inches – direct drive	1.1kw	47500m3/h	380V	1455*1455mm
51inches – belt driven	1.1kw	46700m3/h	380V	1455*1455mm
55inches – direct drive	1.5kw	56200m3/h	380V	1630*1630mm
56inches – belt driven	1.5kw	55500m3/h	380V	1630*1630mm

# PE PLASTIC COWSHED FAN

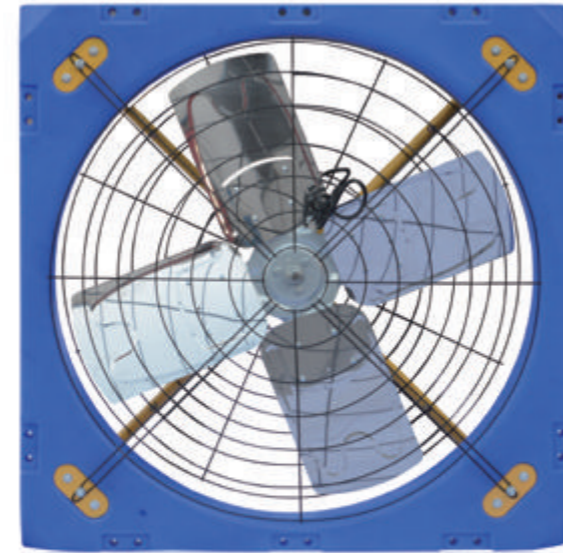
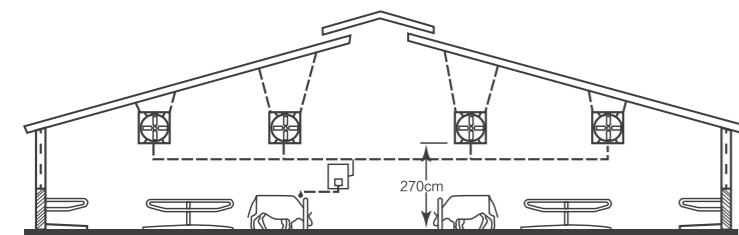
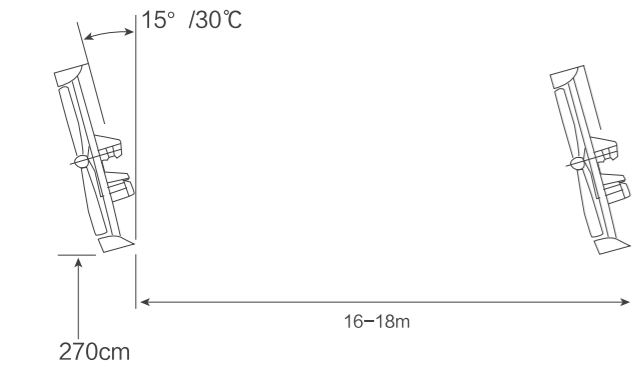
The shell is made of heavy and impact resistant polyethylene, and the outer frame is formed by one-time molding ROTO, with high strength and long service life. Corrosion resistance, safe insulation, never deformation, never rust.

The blade is made of Krupp 430 stainless steel, with a diameter of 1 meter, small air resistance, no rust and corrosion resistance.

The fan blades are calibrated by an advanced computer dynamic balance tester to make the fan run smoothly, reduce noise, enhance stability, and extend service life.

The aluminum shell copper core motor has good heat dissipation, stable performance and long service life. Protection grade IP55, insulation grade F.

## Installation diagram



## Technical Parameter

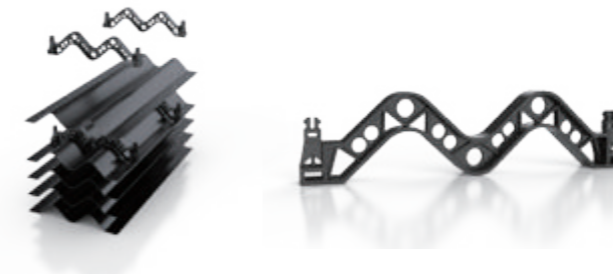
PRODUCT NAME	AIR VOLUME M <sup>3</sup> /HR	INPUT/RATED POWER (W)	OVERALL DIMENSIONS
30inch/1metre panel fan	25430	410/250	1140*1140*300

# LIGHT COVERING HOOD

It is made by injection molding of the no glare PVC material. It can resist the long-term sunlight, chemical corrosion, and cleaning at high pressure;

It is reasonably designed to be conveniently installed with different sizes to efficiently reduce the brightness;

The outer frame materials are stainless steel frame and galvanized steel frame;



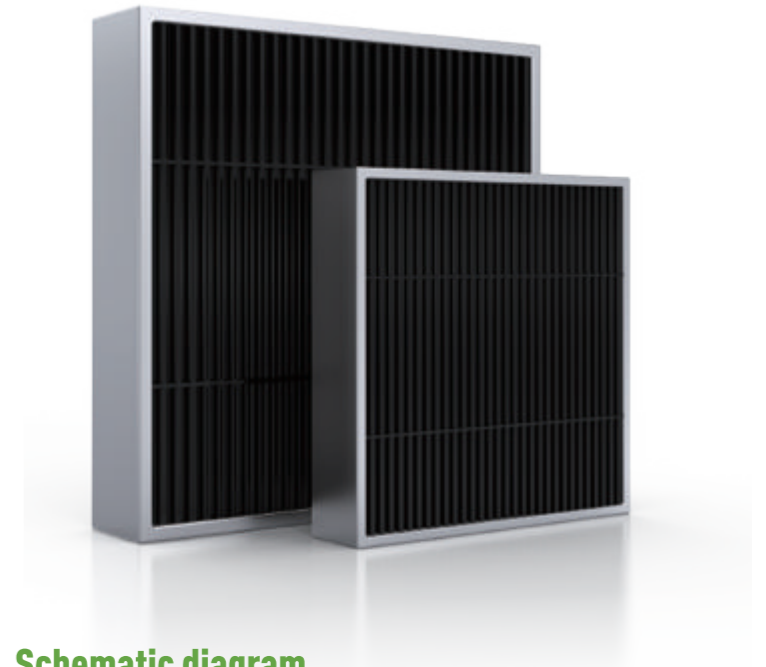
## Schematic diagram



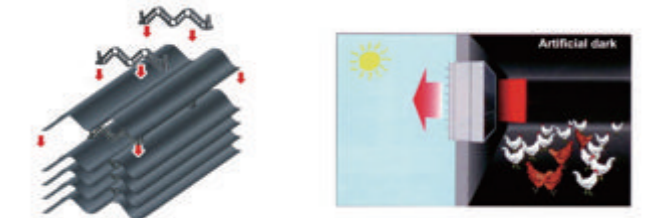
## Technical Parameter

MODEL	HIGH (MM)	WIDTH (MM)	THICK (MM)	WEIGHT (KG)
50*DM-LT	1380	1380	260	48
36*DM-LT	1060	1060	260	32
Air-Inlet on side wall	630	250	250	11

The product specifications and dimensions can be processed according to the size provided by customers, The standard specifications are 1380\*1380\*260, 1060\*1060\*260, 630\*250\*250.



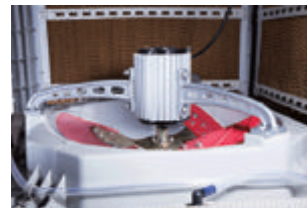
## Schematic diagram





# INDUSTRIAL AIR COOLER

The water suction pump will pump the cold water on the base to the top of the machine, and then the water separator on the top will evenly flow down to wet the water curtain, giving full play to the characteristics of the water curtain's rapid evaporation of water, using the logistics principle of water evaporation and heat absorption to cool the air. The hot air absorbed by the machine from the outside will be filtered by the water curtain and evaporated by water to absorb the heat of the air, and become cold air to blow out, achieving good cooling effect.



Pure copper core motor



Thickened water curtain



Metal fan leaf



Double filter water pump

## Air outlet mode



Upwind



Downdraft



Side air outlet

## Technical Parameter

Air cooler series	1.5KW	2.2KW
Product model:	YFA-A variable frequency type	YFA-F
Water storage capacity (L):	40	40
Required water pressure:	( $\geq$ kg/cm <sup>2</sup> )1.5-2	( $\geq$ kg/cm <sup>2</sup> )1.5-2
Air outlet form:	Up, down, side	Up, down, side
Air supply distance (m):	20	30
Applicable area (m <sup>2</sup> )	80-120	120-150
Equipment noise (dBA):	$\leq$ 70	$\leq$ 70
Overall dimension (mm)	1100 × 1100 × 950	1100 × 1100 × 1150
Air volume (m <sup>3</sup> /h):	18000	2500
Voltage (V):	380/220	380
Water pump power (W):	40	40
Speed change:	Single speed	Single speed
Fan type:	Axial flow	Axial flow

# INDUSTRIAL ROOF FAN

1. The product consists of plastic air duct, impeller, low noise motor and other components.
2. The motor is an external rotor motor, with protection grade of IP54.
3. Low noise, large air volume and stable performance. Easy and fast installation, good sealing performance.
4. Compact structure, reliable operation and convenient maintenance.
5. When the fan starts, the hood opens upward under the action of wind pressure, and the fan starts to work.
6. When the fan is stopped, the hood closes the air outlet by falling by its own weight to prevent rain, snow, etc. from entering the room.
7. The product can be widely used for the ventilation of gardening, livestock and poultry breeding, enterprise workshops and public indoor activity places (such as ammonia, heat, moisture and other dirty gases).

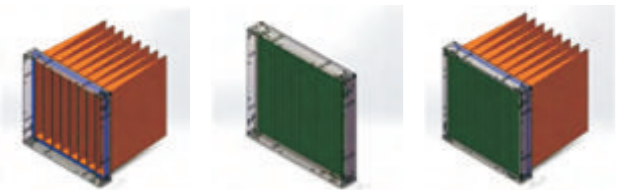


## Technical Parameter

MODEL	VOLTAGE (V)	ELECTRIC MACHINERY	SIZE/DIAMETER (MM)
600	220v/380v	Pure copper motor	600*600

# PRIMARY FILTER

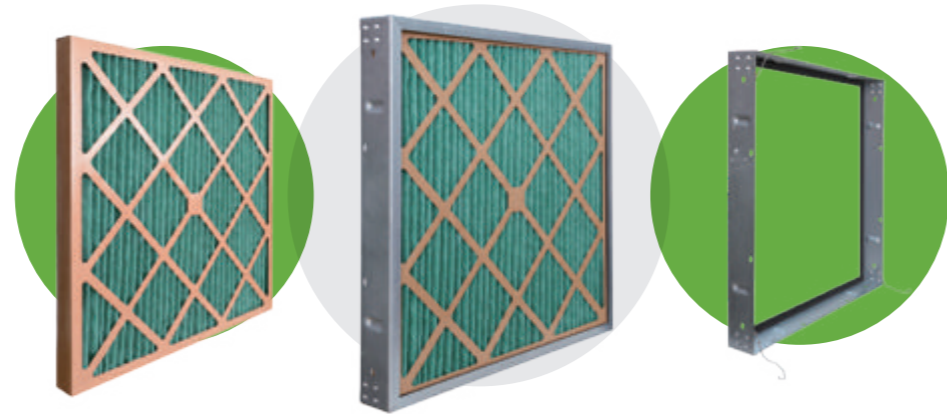
The environment-friendly high-performance folded primary filter is a pre-filter of ventilation system with good performance. The filter material is made of flame retardant material blended with cotton and chemical fiber, which has stable efficiency and dust capacity; 15 pleats/inch, 50% more filtering area than conventional products; The outer frame is made of high moisture resistance and high strength waterproof kraft linerboard; The air outlet surface of the filter material is covered with all-metal support net, and the air filter is full of tension and strength as a whole; The square paper frame surface design is beautiful and generous, with both strength and effective reduction of wind resistance.



Only install the primary filter with flange thickness of 20mm

Only install primary filter with flange thickness of 45mm

Install two-stage filter with flange thickness of 20mm+45mm at the same time



## Product features

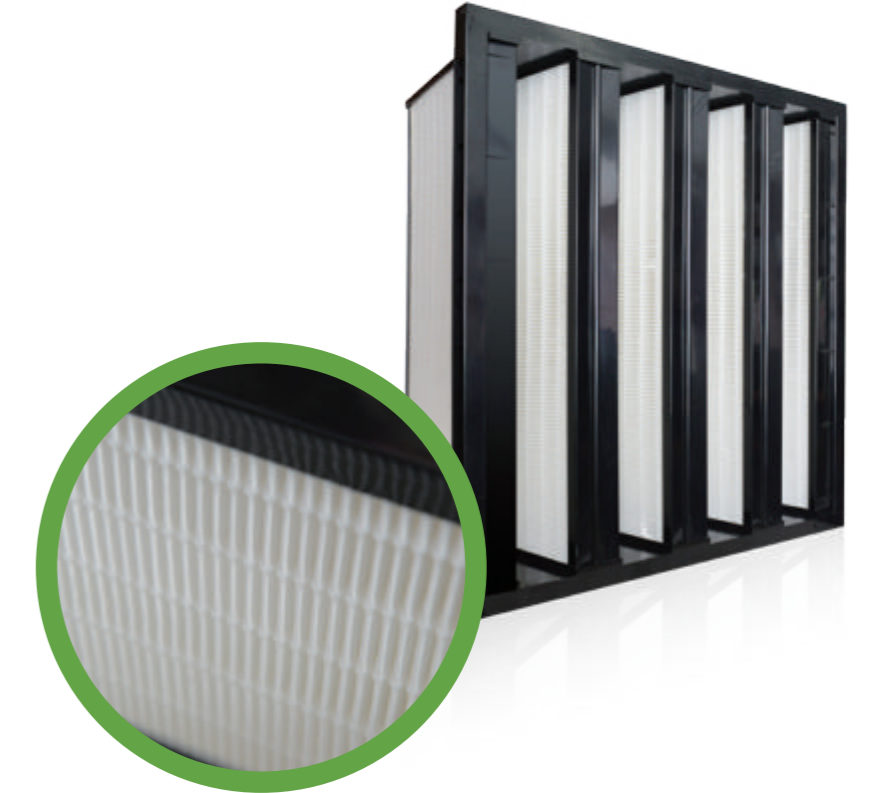
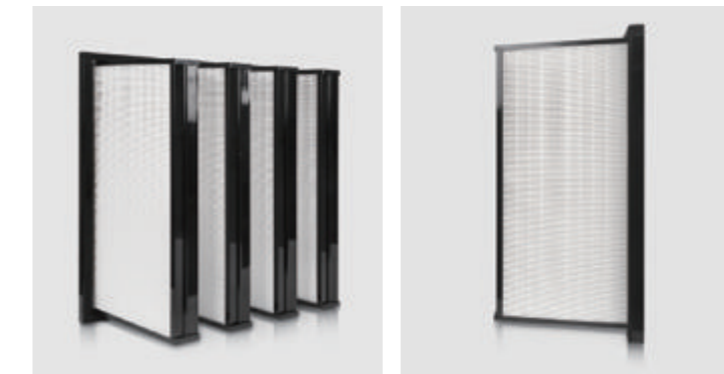
- The outer frame is made of high moisture resistant kraft cardboard which is cut and formed by the mold at one time;
- The filter element adopts a folded design with a pleat density of up to 36mm/pleat;
- The flame retardance of the filter material conforms to the German industrial standard DIN53438-F1;
- The waste filter can be incinerated, which is beneficial to environmental protection;
- Low operation resistance and large dust capacity;
- Recommended final resistance: 220Pa 2.5m/s;
- 100% moisture resistance;
- 90% temperature resistance;

## Technical Parameter

SERIES	W*H (MM)	DEPTH (MM)	RATED AIR FLOW (CMH)	INITIAL PRESSURE DROP (PA)	NET WEIGHT (KG)
CFPP-G4	592*592	45	3400	62	0.6

# SUB-HIGH EFFICIENCY FILTER

The sub-high efficiency filter, whose filtration efficiency is between E10 and E12, is often used in the working conditions where the purification requirements are between 85-95% and 99.5-99.95% (MPPS). The combined use is primary efficiency G3/G4+sub-high efficiency E10/E11+E12, which is one of the commonly used filter combinations in ventilation and purification filtration. It is mainly used for terminal air filtration of various clean room air supply systems, such as operating rooms, laboratories, precision electronic instrument manufacturing and pharmaceutical industries or working conditions.

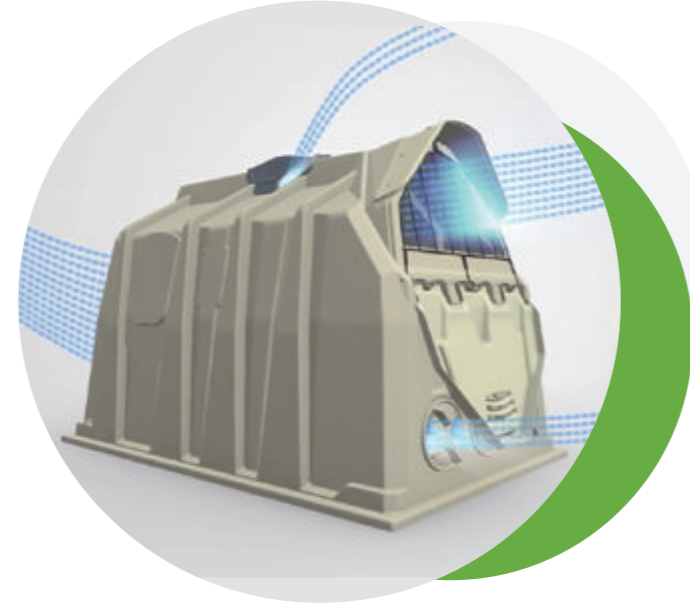
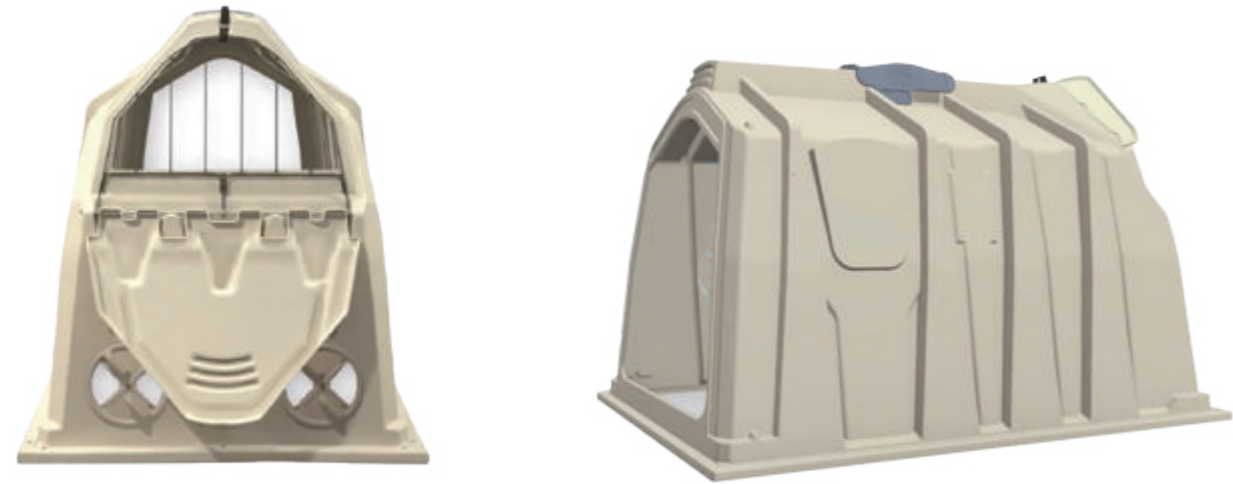


## Technical Parameter

SIZE	INTERLAYER	AIR VOLUME (M <sup>3</sup> /H)	FILTER AREA (M <sup>2</sup> )	DUST CAPACITY (G)	INITIAL RESISTANCE (0.5M/S)	FINAL RESISTANCE	FILTRATION EFFICIENCY
285*285*295	2	700	5.7	380	<=220Pa	440Pa	99.99%@0.3 μm
595*595*295	3	2100	17.8	1180	<=220Pa	440Pa	99.99%@0.3 μm
595*595*295	4	2700	23.8	1570	<=220Pa	440Pa	99.99%@0.3 μm
610*610*295	5	3500	30.4	2010	<=220Pa	440Pa	99.99%@0.3 μm
915*610*295	6	4200	36.5	2410	<=220Pa	440Pa	99.99%@0.3 μm



# POLYETHYLENE CALF HOUSE



## Product features

- Unique rear ventilation design can adjust the ventilation volume at will. It is also convenient to add padding from the rear. And prevent calves from jumping out of the rear window.
- Calf Island is easy to move. It is convenient to sterilize the calf feeding area regularly.
- The opening and closing range of the top vent can be adjusted as required. Ensure that no water will enter the island in rainy and snowy weather. Ensure the dryness in the calf island.
- There are 2 bucket frames on the fence door of Calf Island. Convenient feeding.
- It is easy to install and disassemble, and the feeding area can be flexibly moved.
- The white color of Calf Island can reflect a lot of solar heat. The body has good heat insulation and anti-ultraviolet functions. The temperature difference between the inside and outside of the calf villa is about 5-8 °C.

### Stand-alone single-column feeding

Isolation greatly reduces the incidence of disease  
Ensure the safety and health of calves  
Ensure high survival rate

### High-quality special materials

The production process of using high-quality imported special polyethylene raw material for hot roll molding to make the product seamless  
UV resistance > 8level, rugged and durable  
Long service life, safe, non-toxic and environmental protection  
Light transmittance < 1% effective thermal insulation 5 °C

### Unique design

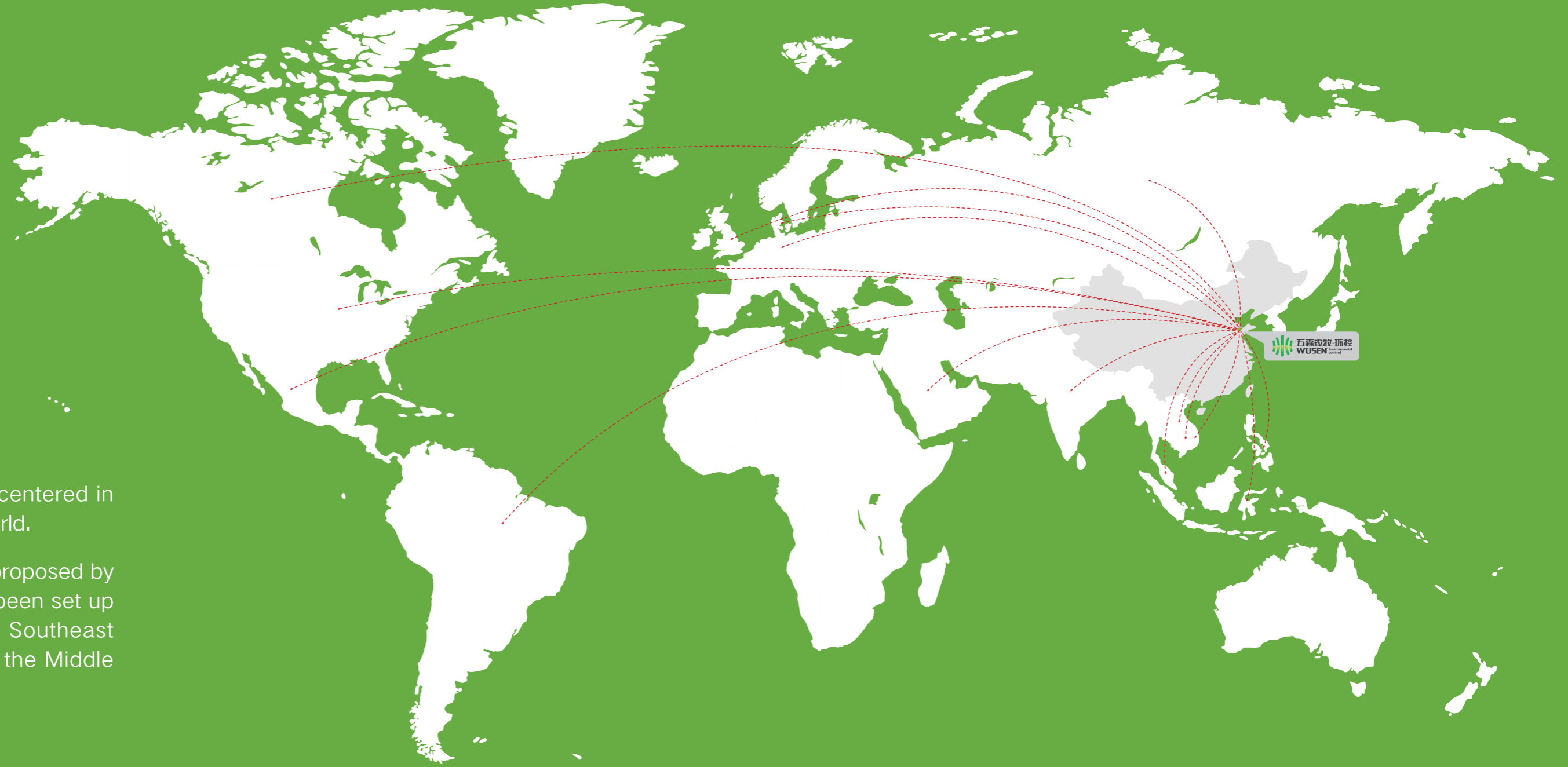
Multiple ventilation design in calf island  
Adjustable rear ventilation design  
Create a good and comfortable ventilation environment for calves  
Keep the living space of calves dry and clean  
Promote the healthy growth of calves.

## Technical Parameter

PRODUCT NAME	PRODUCT NAME	MODEL	SPECIFICATIONS (MM)	TEXTURE OF MATERIAL
Calving pen	Fenceless calf house	WS001	2300*1500*1400	Imported high-quality polyethylene
	No fence version 1.5 calf house	WS002	2200*1220*1400	Imported high-quality polyethylene
	No fence version 2.0 calf house	WS003	2200*1250*1400	Imported high-quality polyethylene
	Fenceless calf house	WS004	2000*1100*1280	Imported high-quality polyethylene
	4-piece plastic calf fence	WS005	1920*1220*1100	Imported high-quality polyethylene



# SALES NETWORK



Establish a sales and service center centered in Shandong and radiating around the world.

According to the "the Belt and Road" proposed by the state, an international center has been set up to export products to Europe, Africa, Southeast Asia, North America, South America, the Middle East and other regions.