

CASON



# Aerobic Vertical Fermentation Machine

Qingdao Cason Machinery Manufacturing Co.,Ltd

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# Company Introduction

Qingdao Cason Machinery Manufacturing Co.,Ltd

## Company Introduction



Qingdao Cason Machinery Manufacturing Co.,Ltd was established in 2014 and entered the livestock breeding equipment industry in 2015. The company set product research and development, production, sales, installation services as a whole, the main products include: pig feed trough, pig stalls, automatic manure scraper machine, organic fertilizer fermentation tank and other modern livestock breeding equipment. The company's existing plant area of more than 9000 square meters. With turret type computer punch, CNC bending machine, laser cutting machine, laser welding machine, line crane and a series of modern production equipment.

There are more than 135 employees, including six technical team members, 24 administrative staff, After-sales installation service team of 25 people and more than 80 workshop workers. The team keeps moving forward with the goal of "correctness, efficiency and innovation".



## Company Introduction



Qingdao Cason Environmental Protection Equipment Manufacturing Co., Ltd. was established in 2020. Mainly produces fermenters, dung scrapers, and other carbon steel weldments. The company has a factory floor area of 12,000 square meters and more than 150 employees in total. Among them, including 9 technical research and development team, 20 administrative staff, 41 after-sales installers and more than 83 workshop workers.

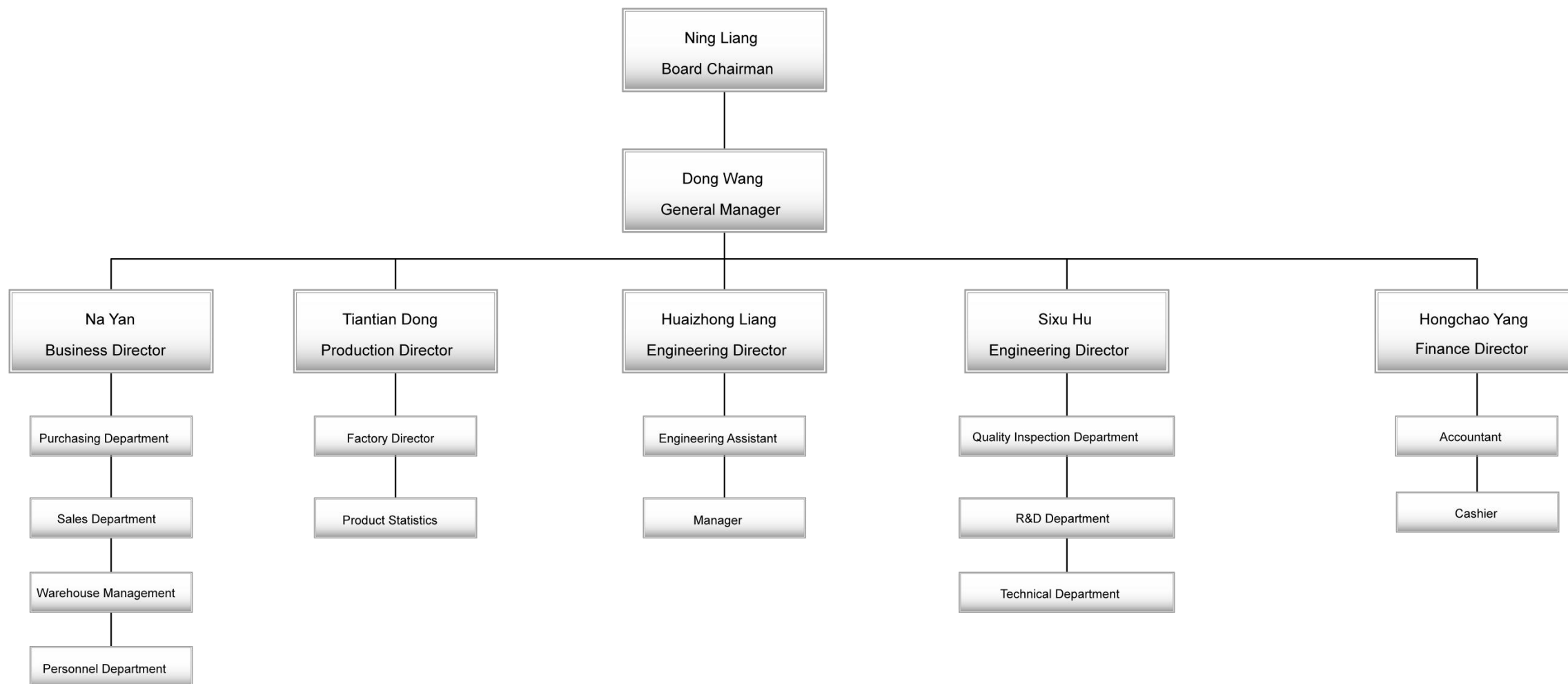
# Company Introduction

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Sichuan Cason Technology Co., Ltd was established in 2020. The company integrates product research and development, sales, production and installation services. It mainly produces modern animal husbandry equipment such as pig feeding trough, pig stalls, automatic manure scraper machine, organic fertilizer fermentation machine, etc. The total plant area of the company is 4,000 square meters, with a total of 73 employees, including 2 technical teams, 8 administrative staff, 18 after-sales installation teams and 45 workshop workers.

# Company Organization





## Composition of team



**The core members of our team are all from companies that originally processed for Japan**



- General Manager of Qingdao Cason Machinery Manufacturing Co., Ltd.
- In 2015, due to optimistic about the market prospects of animal husbandry equipment, it began to promote enterprise transformation
- Bring the high standards of Haier and Hisense's supporting production into new industries, investigate the market, introduce professional talents, and adhere to technological innovation as the basis for enterprise development
- In the past five years, the enterprise has been built into a "specialized and new enterprise" and a "high-tech enterprise"





- Leading all employees to achieve a new breakthrough in annual sales of over 100 million yuan
- During the period, I experienced the test of African swine fever and COVID-19 epidemic, and always believed that innovation is the driving force for the sustainable development of enterprises
- Increase the research and development of new products, pay attention to product quality, build corporate brands, and let the company grow into a benchmark enterprise in the industry in a short time

## Team Engineer—Liang Huaizhong



- More than ten years of project research and development experience
- Formerly the core personnel of Japanese processing enterprises
- Senior engineer in the R&D department of our company
- The principal is responsible for project research and development and product debugging
- Responsible for the installation and commissioning of fermenters in Guangdong, Jiangsu, Sichuan, Liaoning and other projects. The working ability and attitude have won unanimous praise from users.

## Team production manager—Tian Sixuan



- More than eight years experience in production innovation.
- Formerly the core personnel of Japanese processing enterprises.
- At present, he works as the production director in our company.
- Mainly responsible for production management, workshop scheduling and production process, strengthen quality management, and have a great sense of responsibility

## Team Senior Technician—Du Yongxin



- At least 8 years welding experience, with welding professional qualification.
- The core personnel of the former Japanese processing enterprises.
- Mainly responsible for the welding of fermenter.
- He has participated in the production of many projects in Guangdong, Hunan, Sichuan and Liaoning.

**02**

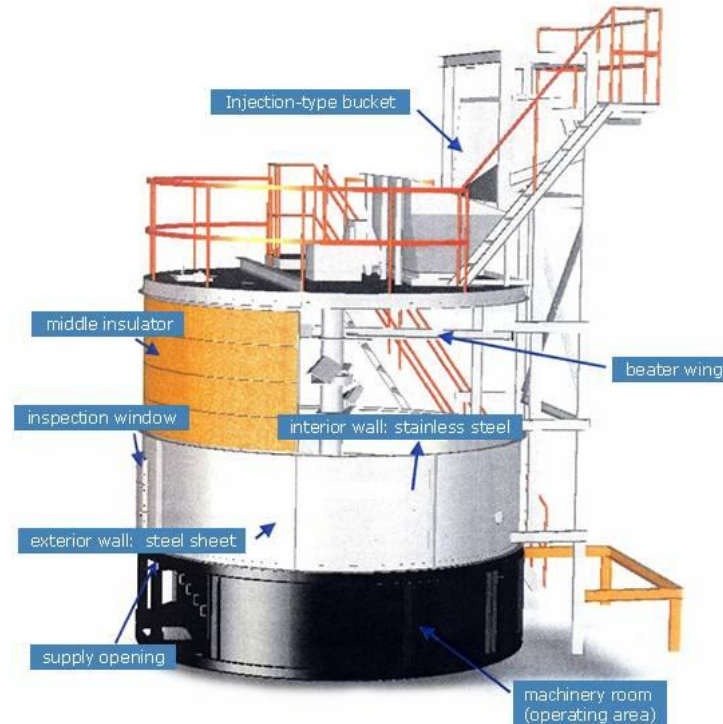
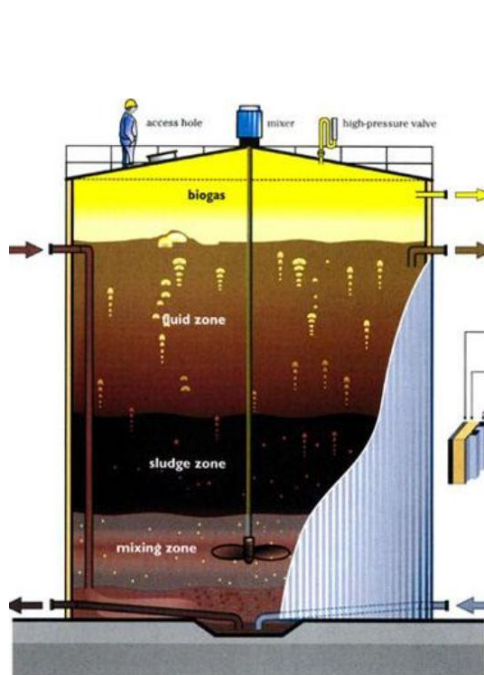
# System Introduction

Qingdao Cason Machine Manufacture Co., Ltd



# Fermentation Method ----- Anaerobic & Aerobic

We need a fast and effective fermentation way .

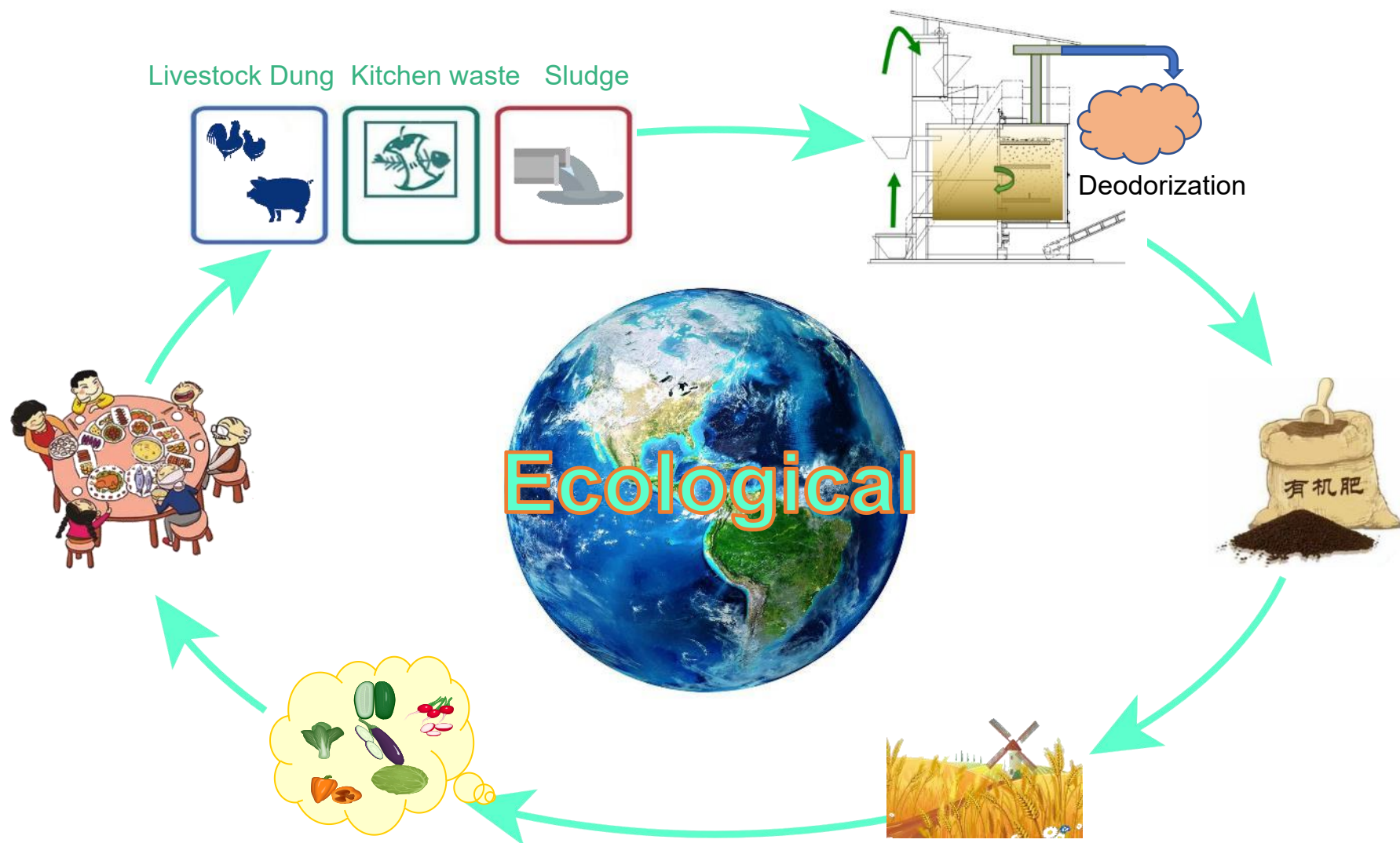


Some of the organic stuff of the biogas residue is partially dissolved in the biogas slurry, so the composting power is low.

The C / N ratio and pH value after anaerobic fermentation will affect the aerobic bacteria activity in the later stage

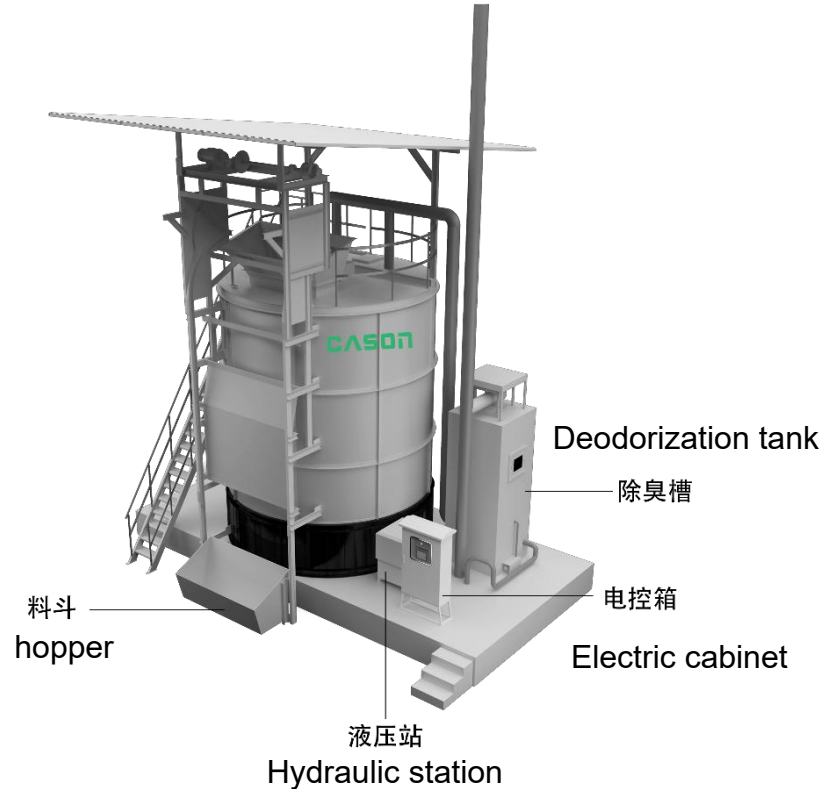
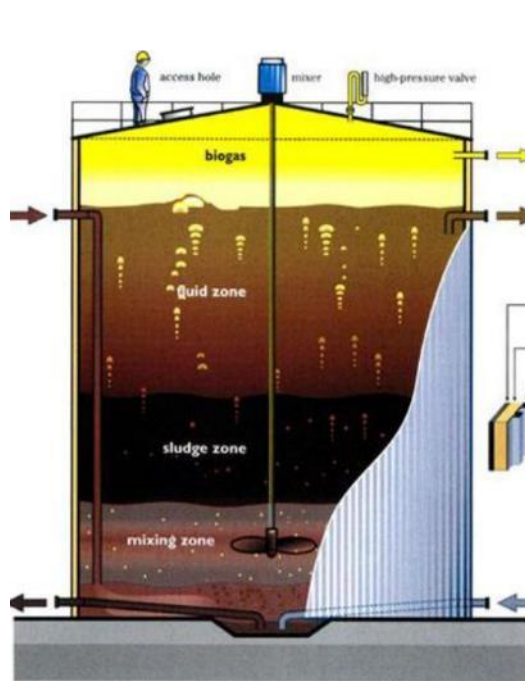
The key point is that anaerobic fermentation needs long cycle .

# Aerobic Compost--organism recycling system



# Fermentation Method ----- Anaerobic & Aerobic

Similarity: Degradation of organic pollutants, killing pathogens, into plants more easily absorbed fertilizer.



Differentia: Aerobic fermentation time is short, need natural ventilation or forced ventilation, need reaction. The anaerobic fermentation time is long, and biogas, biogas slurry and biogas residue are generated.

# Aerobic composting method

## Stack composting



## Trough compost



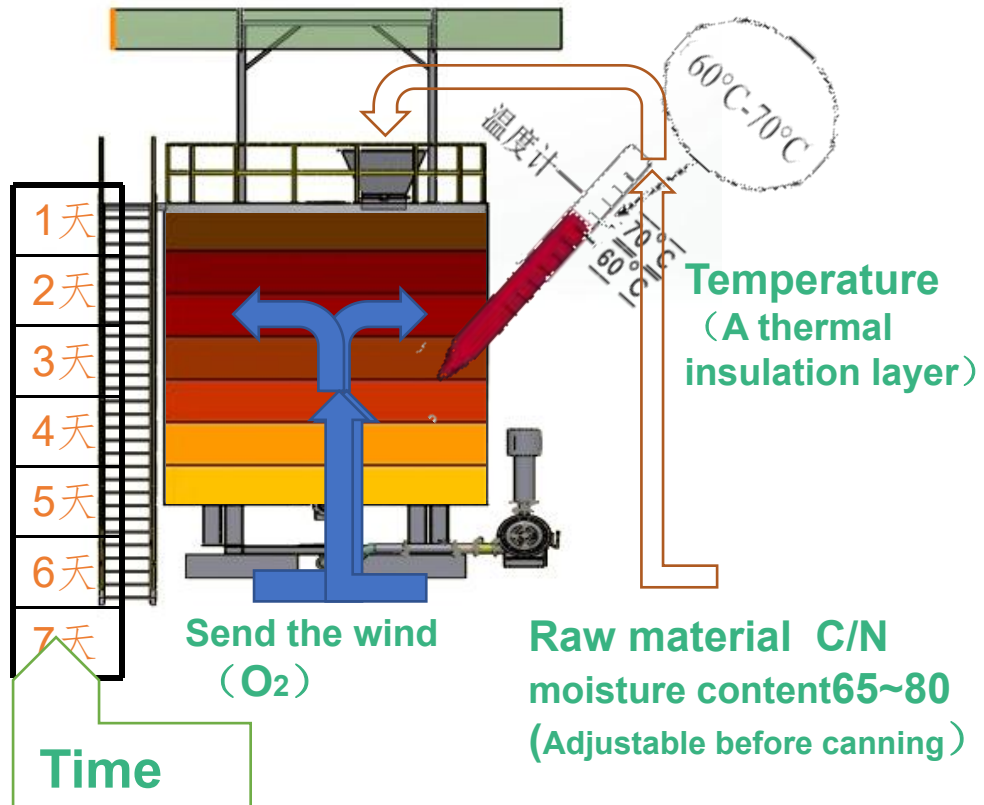
## Closed vertical fermentation



- Aerobic composting has a long history at home and abroad, from the simple plant ash mixed open composting to the later mechanized composting. Development to today's market mainly by the crib, trough, and closed vertical three.
- They all need oxygen and adjust the temperature and water content of the compost. The first two mainly used flip method of oxygen, but covers a large area, poor heat preservation effect. And bacterial fertilizer and auxiliary materials are added to regulate humidity every time.
- The vertical close fermentation occupies small area and has good heat preservation effect with an insulating layer in that middle of the inner wall and the outer wall. No need of secondary addition of bacterial fertilizer and other auxiliary materials in the tank. It has been running in Japan for 50 years.



# Fermentation conditions



## 1.Raw material(C/N)

The organic matter content, C/N ratio and humidity must satisfy the rapid reproduction of aerobic bacteria

## 2. Oxygen

Aerobic bacteria need oxygen to break down organic matter and must supply air to the raw material. Oxygen is transported to the tank through the bottom high-pressure fan and the top high-pressure fan.

## 3. Humidity(35~80%)

The water content of raw materials before being put into the pot determines the treatment capacity and treatment time, so it is better to lower the water content than 80%, if higher than 80%, straw and other premix can be used.

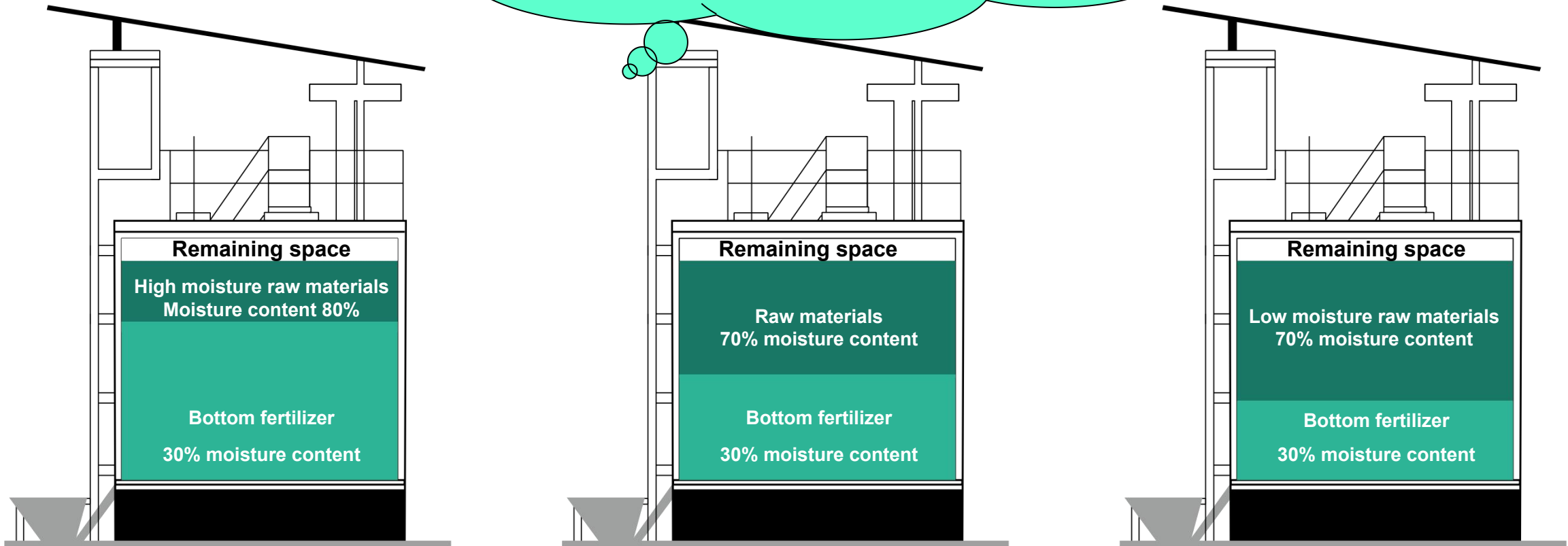
## 4. Temperature(60° ~70° )

Aerobic bacteria need an appropriate temperature, so the temperature of the tank with insulation material will drop to 30° ~40° after 3~4 days of fermentation. At this time, the activity of aerobic bacteria will be reduced, and the organic fertilizer will be almost completely decomposing



# Aerobic bacteria

The higher the moisture content of raw materials, the more seed compost is needed, and the less organic waste can be treated

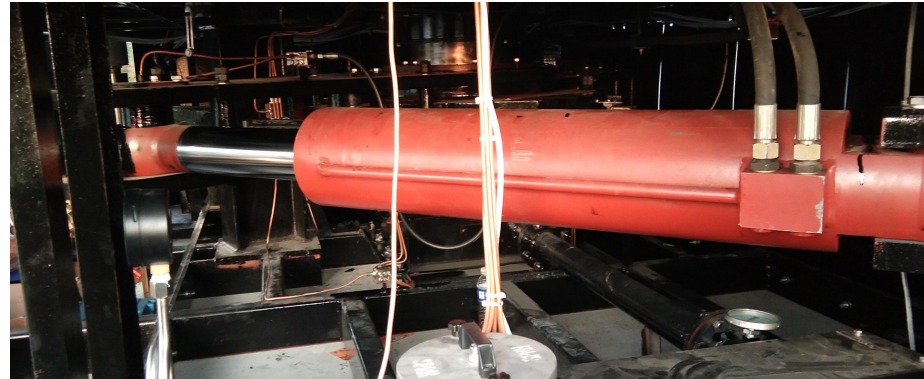


## NO.1 Feedstock



The material is lifted to the fermentation chamber by the lifting device. High moisture content can reduce moisture through mixing. The C/N ratio can also be adjusted by premix.

## NO.2 High temperature aerobic fermentation stage



Rapid heating stage: the temperature rises rapidly to 50-65 °C in 1~2 days under the action of microorganisms  
High temperature stage: continuous decomposition for 5~7 days, through mixing and ventilation to meet the oxygen demand  
Cooling stage: after rapid fermentation, continuous cooling

## NO.3 Ejection of compact



The material in the fermentation room falls layer by layer under the action of the spindle and gravity, and is discharged from the discharge port.

Just out of the tank of organic fertilizer, the temperature is about 35°C~40°C, water content of more than 30%, aerobic bacteria are still active at this time. Through the natural cooling and cooling process to evaporate water to stabilize the microorganisms, the end of the whole fermentation process, organic fertilizer maturity reached more than 95%, belongs to complete decay.



Later can be granulated or directly bagging, sales.

**NO.1**

It is high efficient which can achieve the water control and ripening effect of the traditional process in 10 -15 days.

**NO.2**

The loss of ammonia-volatile nitrogen reduced by about 15%. The concentration of ammonia and hydrogen sulfide in the ambient air outside 10-meter of the fermentation reactor system is lower than 2%; The ammonia emission can be reduced by 50% after the odor is collected and processed by the closed system.

**NO.3**

Temperature of fermentation chamber keeps above 50 °C for 5 days, which can kill eggs of pathogenic bacteria and weed seeds. Achieving harmless treatment of materials .

**NO.4**

Vertical tank needs small area and all the parts contacting with the raw material is made of stainless steel; the power chamber is separated from the fermentation bin ; so the whole machine has good anti-corrosion effect and long service life.

Parameter	Numerical range	Average	Chinese agricultural standard (NY525-2012)
Moisture %	20.2~37.2	32.5	≤30
pH	7.1~8.8	8.1	5.5-8.5
Organic matter %	50.8~72.8	62.4	≥45
Total nitrogen %	2.3~4.0	2.9	/
Total phosphorus(P <sub>2</sub> O <sub>5</sub> ) %	3.9~5.3	4.0	/
Total potassium (K <sub>2</sub> O) %	1.5~3.1	2.9	/
The total nutrient (N+ P <sub>2</sub> O <sub>5</sub> + K <sub>2</sub> O) %	9.1~11.3	9.8	≥5.0
Cd (mg/kg)	0.17~2.81	0.65	≤3
Cr (mg/kg)	0.057~18.6	7.92	≤150
Pb (mg/kg)	0.28~3.48	1.74	≤50
As (mg/kg)	0.15~7.63	1.17	≤15
Hg (mg/kg)	0.00~1.06	0.22	≤2

- Three different batches of pig manure organic fertilizer products were randomly selected for physical and chemical index analysis, and the results were shown in the table.
- Nutrients and heavy metal contents meet the requirements of the NY-525 Organic Fertilizer Standard.
- The average total content of nitrogen, phosphorus, and potassium is as high as 9.8%, which is about 1 times higher than the standard value.



Indicator	Range
Moisture (H <sub>2</sub> O)	25.32 %
Nitrogen (T-N)	2.65 %
Ammonia nitrogen (NH <sub>3</sub> -N)	0.62 %
Nitrate nitrogen (NO <sub>3</sub> -N)	0.003 %
Phosphorus pentoxide (P <sub>2</sub> O <sub>5</sub> )	6.62 %
Potassium oxide (K <sub>2</sub> O)	3.25 %
Total calcium oxide (CaO) ①	16.85 %
Magnesium Oxide (MgO) ①	1.46 %
Manganese oxide (MnO) ①	0.039 %
Boron oxide (B <sub>2</sub> O <sub>3</sub> ) ①	0.011 %

Indicator	Range
iron (Fe) ①	0.19 %
copper (Cu) ①	24mg/kg
Zinc (Zn) ①	360mg/kg
Molybdenum (Mo) ①	2mg/ kg
Organic carbon (C)	10.89 %
Organic matter (strong heat reduction method))	31.91 %
Crude humic acid	4.82 %
Carbon to nitrogen ratio	4.1
Cation exchange capacity	43.2 mq/dry stuff 100g

**03**

# Case introduction

Qingdao Cason Machine Manufacture Co., Ltd

Model	C-120	C-90	C-60	C-36
Effective volume	116m <sup>3</sup>	86m <sup>3</sup>	56m <sup>3</sup>	32m <sup>3</sup>
Installed power	40kw	40kw	23.35kw	21.45kw
Equipment weight	43t	39t	22t	19t
Swine manure handling capacity (Water content75%)	9-12t/day	7-9t/day	5-7t/day	4-6t /day
Pig manure organic fertilizer yield	3t	2.2t	1.5t	1t
Chicken manure handling capacity(Water content60%)	14t	12t	8t	6t
Chicken manure organic fertilizer production	6t	5t	3t	2t

# Equipment Technical Advantages

**Tanks: Strictly follow Japanese welding process**



Full welding



Subsection welding



# Equipment Technical Advantages



**1、 Structural: Three disc on each floor**  
**(Good airtightness, firm and small denaturation)**

**2、 The lining membrane attached**  
**(Prevent scratches)**

**3、 Weather resistant car paint**  
**(Not just any paint)**

**4、 The process of spraying**  
**polyurethane,visibility, uniformity, and free filling**



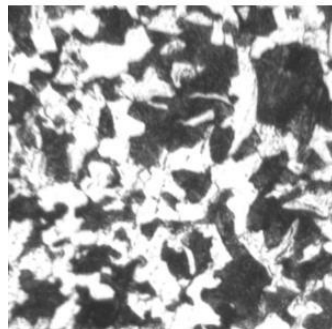
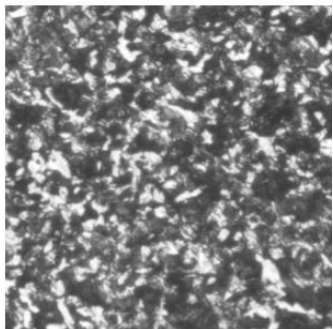
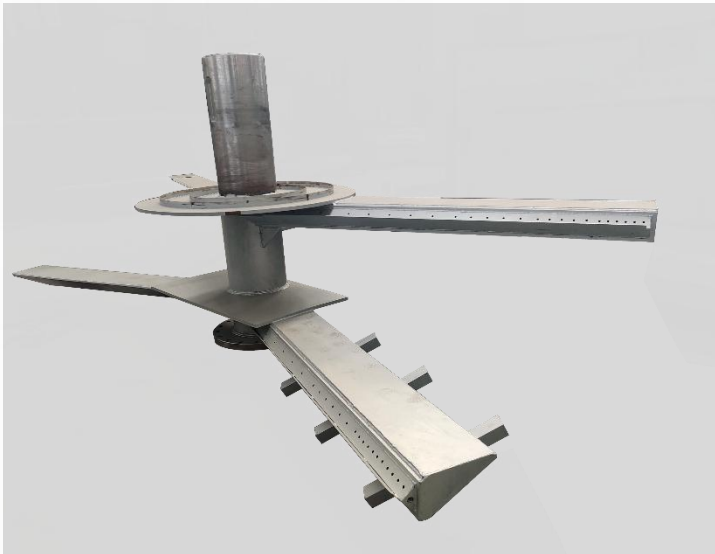
Normalizing: Normalizing is a heat treatment to improve the toughness of steel. After the steel member is heated to 30 ~ 50°C above AC3 temperature, the heat is kept for a period of time, and the steel member is discharged and air-cooled.



The main characteristic is that the cooling speed is faster than annealing but lower than quenching. During normalizing, the crystal grains of steel can be refined in a slightly faster cooling, which can not only obtain satisfactory strength, but also obviously improve toughness (AKV value) and reduce cracking tendency of components.



The mechanical properties of some low alloy hot rolled steel plates, low alloy steel forgings and castings can be greatly improved by normalizing, and the machinability of the materials can also be improved.



The variation amount is small, which conforms to Japanese national standard JISS25C C.

Metallographic structure: refers to the composition of a metal structure whose chemical properties, crystal structure, and physical properties are the same, including solid solutions, metal compounds, and pure substances.

1. Metallographic structure
2. Material test





Japan top blower 2.2KW, low failure rate ,working stable . No attenuation of air volume



Deodorizing exhaust fan( 3.7KW) is from China .  
The waste air is high temperature and strong corrosive we adopted high corrosion Japan fan.

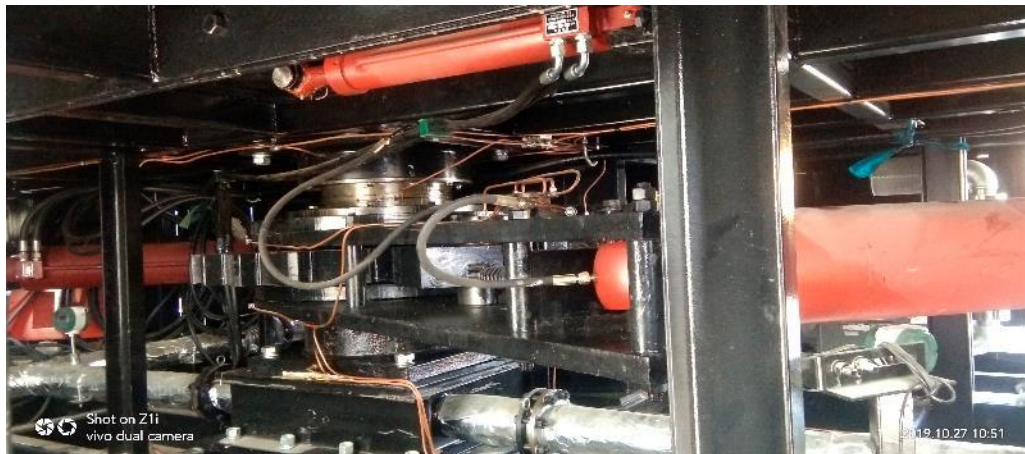


Two sets of high pressure blower at the bottom, Japanese brand, high pressure air supply, with filter element. 8.7 KW ~ 11 KW. Equipment stability and low failure rate. Ensure the amount of oxygen input.



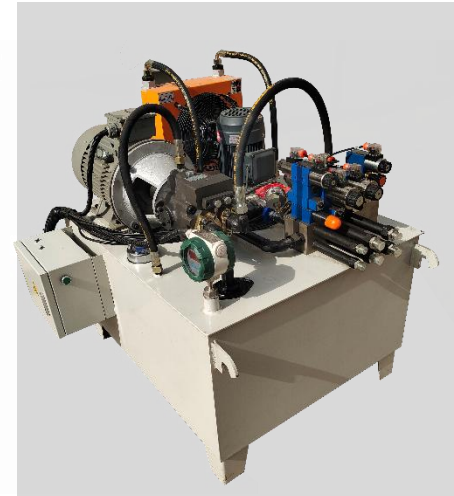
## Key Parts---Hydraulic Driving system

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There is a high wear-resistant copper sleeve between shaft seat and t shaft; automatic centralized oil supply ensures long service life of shaft seat.

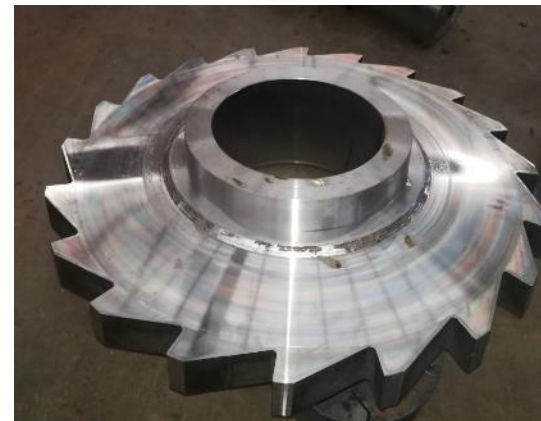
Constant Temp. Hydraulic driving system is adopted , the pressure will not change according temperature





Ratchets are cut from 90 mm steel plates instead of welded from 9 pieces of 10mm thick iron plates.

Both the pawl and ratchet wheel have been milled and wire cut, and they are perfectly engaged during operation. Not easy to wear.





## Shaft Seat & Shaft Sleeve

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Castings material HT250, no sand holes, no blowhole, machine finishing.

High strength and wear resistance of casting parts.

Heat resistance, no deformation.

Perfect combination with the shaft, daily oil injection shaft seat wear resistance can be more than 15 years.





- Each blade is designed with air holes to allow uniform air intake in the fermentation.
- Blade and shaft are welded with special wire to ensure feather strength.
- The entire blade is wrapped with stainless steel, anti-corrosion .
- The three-stage shaft is concentric and lubricated with graphite oil to ensure smooth rotation. There is a copper sleeve between shaft seat and main shaft to ensure the minimum wear.





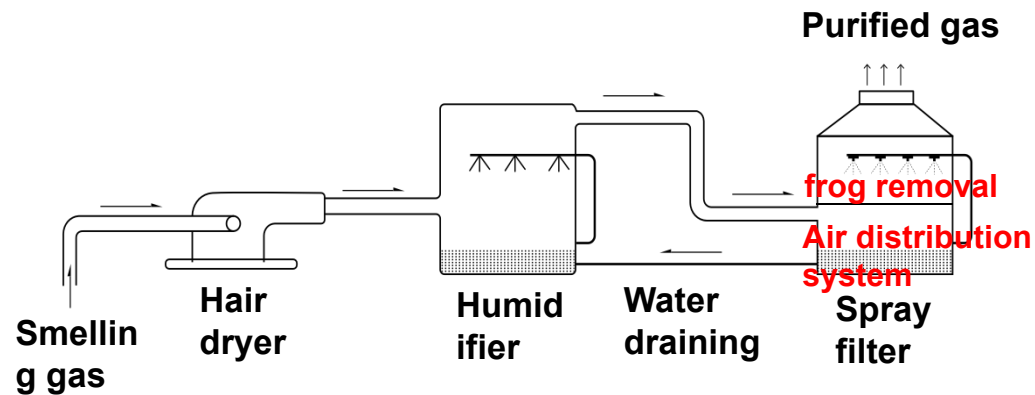


- The main components (contact with raw materials) are made of 304 stainless steel.
- The structure is more reasonable and compact. Larger and multi-layer design of deodorizing tower , higher exhaust pipe make less impact on surrounding environment.

### Tank roof, waste gas collection

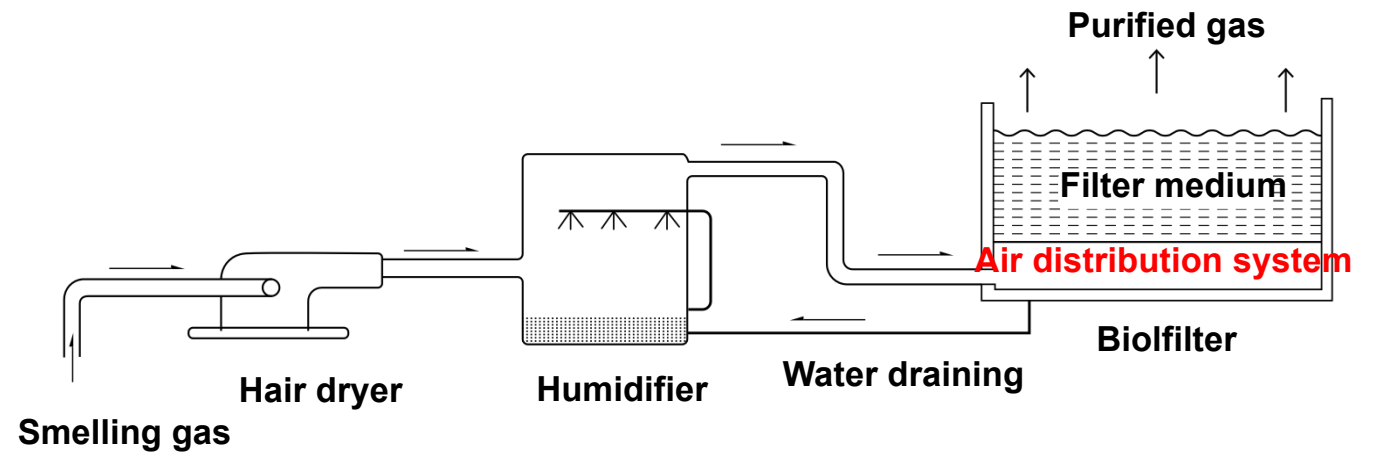


**Methods A: Water elution of odor:**  
mainly the way of spraying.



(Water elution of odor)

**Methods B: Biological deodorization:** by adsorption of activated carbon and asbestos, etc. + adding biological bacteria (nitrifying bacteria)

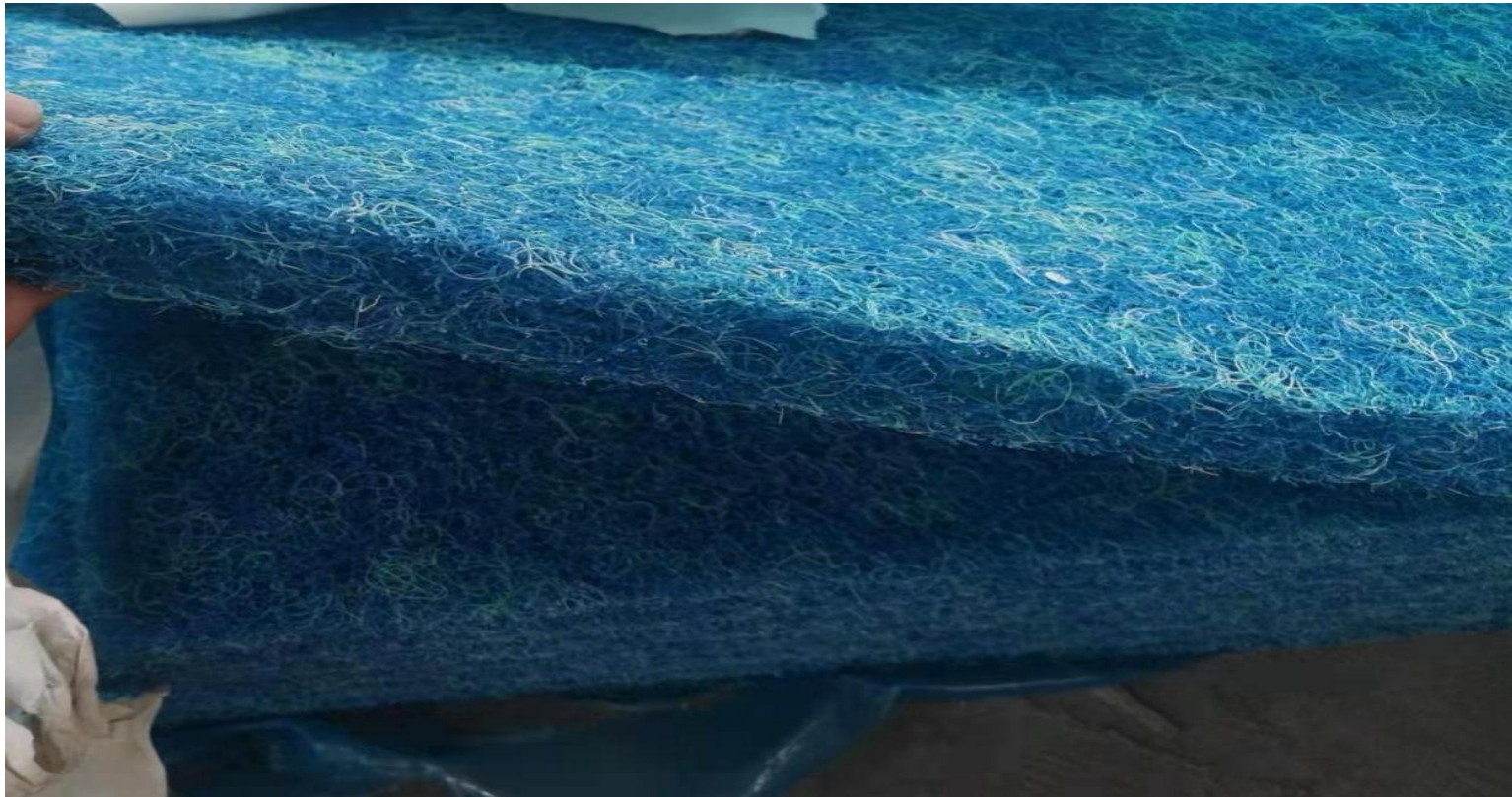


(Biological deodorization)



Three layers of deodorant cotton

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**Three layers of cotton, in line with the emission standards**



### Inside view of control box



Schneider and Siemens electrical components, adopted and PLC centralized control .



International brand electrical parts of cabinet make the control system more stable and a longer service .



PLC control, higher automatic and intelligent , Effectively reduce labor costs .



Remote control and big data analysis APP is being developed .

## Comparison of glass glue and butyl glue



(Toshiba)



(Ordinary)

Our company uses Toshiba brand glass glue, which does not have any chemical reaction with butyl glue within 12 hours.

**04**

# Introduction of the factory

Qingdao Cason Machine Manufacture Co., Ltd

## Production equipment

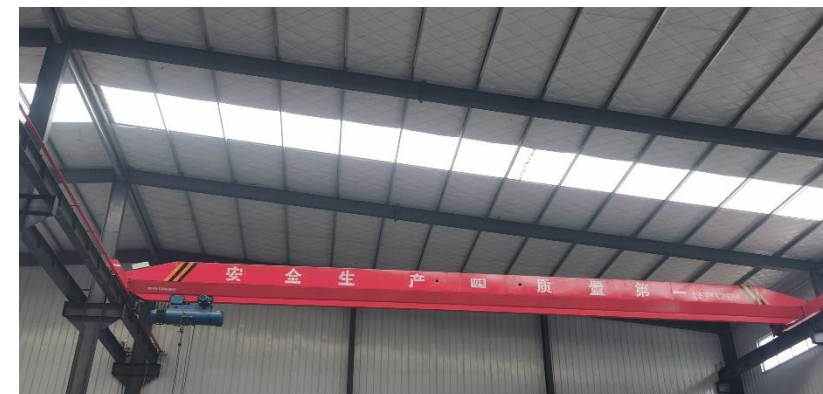
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Bending equipment



Bending equipment



Hoisting equipment



Welding equipment



NC equipment

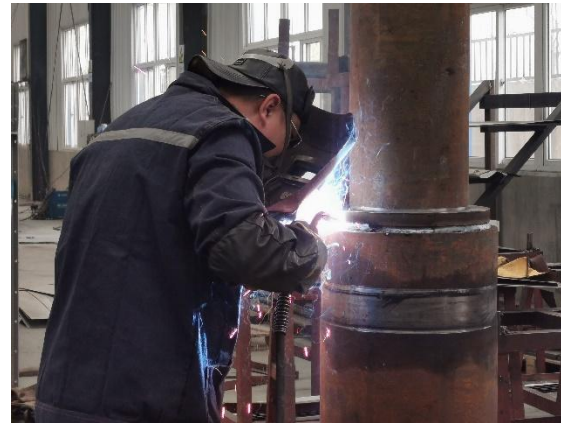
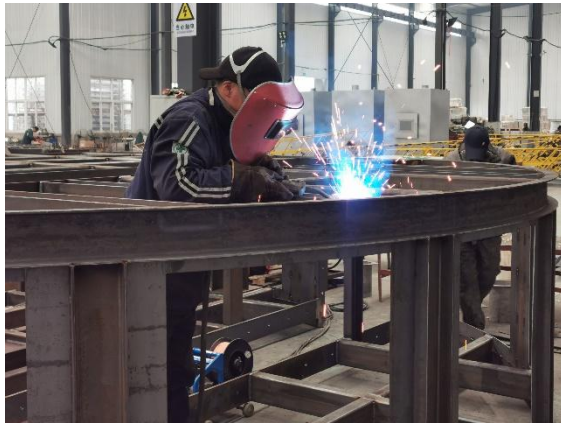
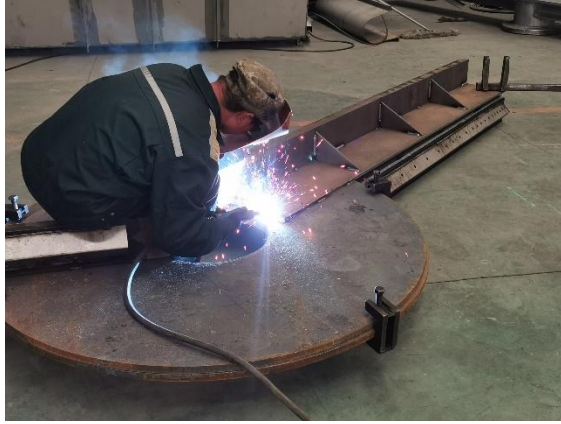


Laser processing equipment

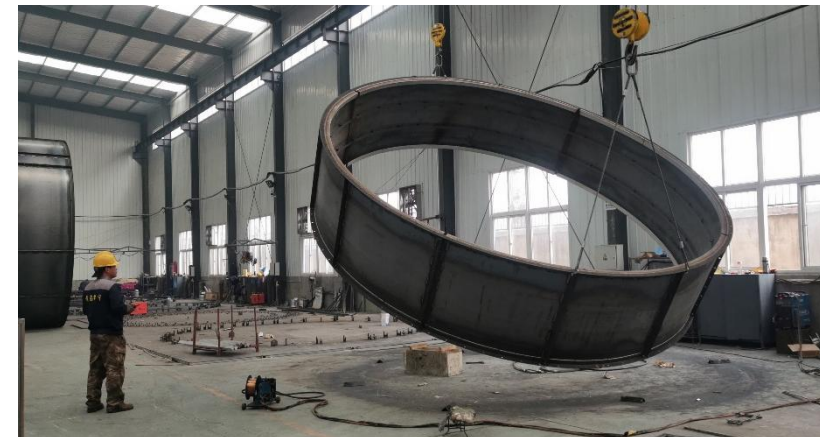


# Welding

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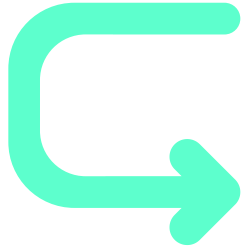
**05**

# Field installation

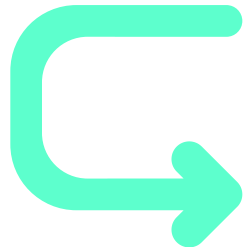
Qingdao Cason Machine Manufacture Co., Ltd



Equipment arrival



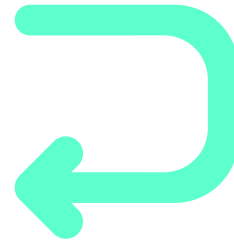
Discharge & installation



Commissioning

Feeding and fermentation

Good Running









## Equipment transportation

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## Installation site

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## Blades installation





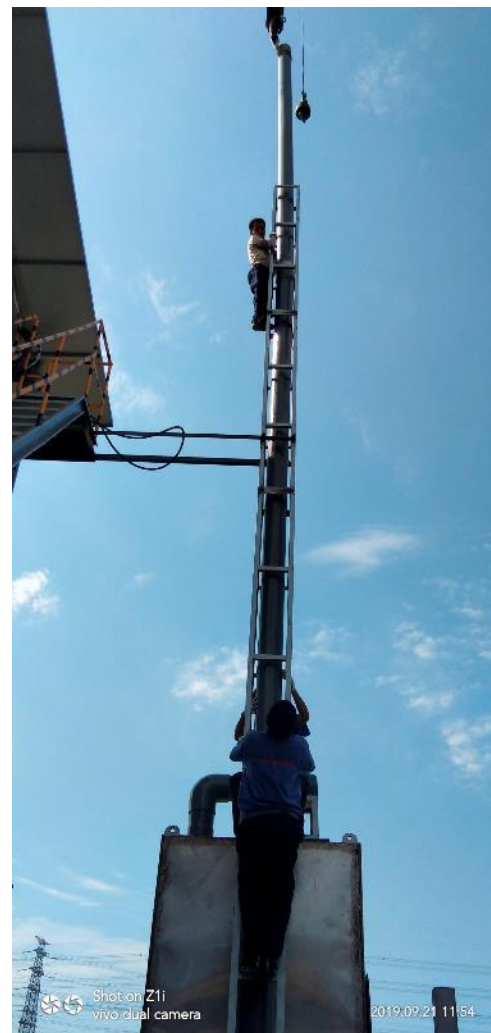
## Ceiling installation

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## Exhaust system installation

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## Installation of After-sales Vehicles

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Debugging completed

CASON





# Manure fermentation





# Production of organic fertilizer

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06

# Case Introduction

Qingdao Cason Machine Manufacture Co., Ltd



## Project case

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Projects in Yujing



Projects in Lianping

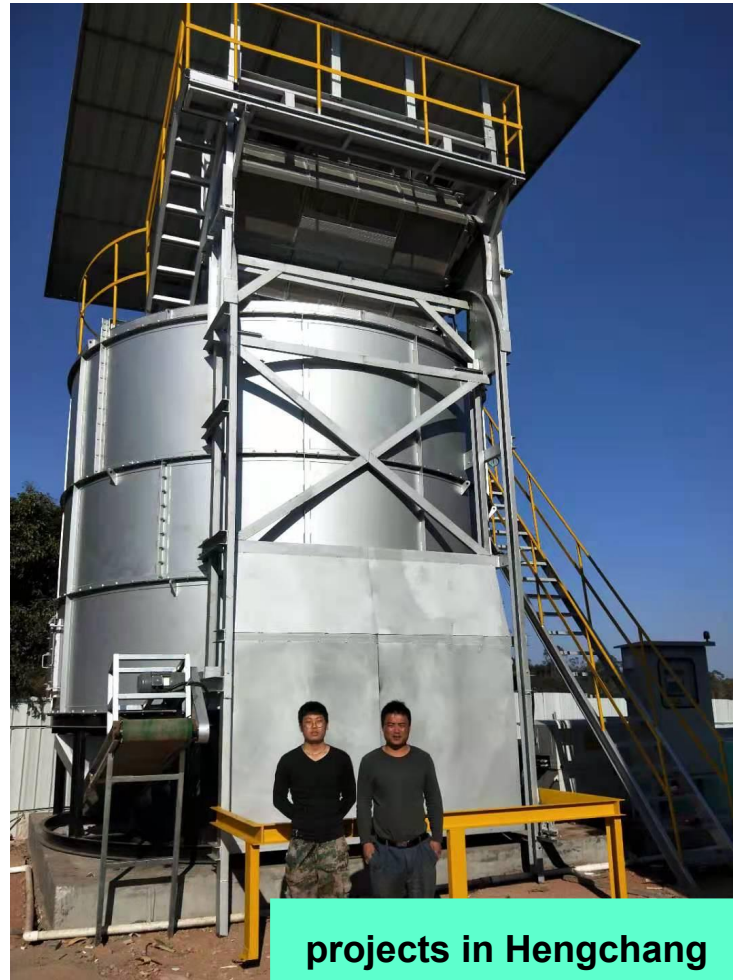


Projects in Heshan



## Project case

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projects in Hengchang



projects in Longchuan

## Projects in Suzhou

CASON





## Projects in Changping

CASON





## Projects in Longzhou

CASON



## Projects in Maganshan

CASON





## Projects in Jiaonan





## Projects in Lianping

CASON





## Project case

CASON



projects in Dongying



projects in Guangxi

## Project case

CASON



projects in Yanting



projects in Chongqing



07

# Service commitment

Qingdao Cason Machine Manufacture Co., Ltd

- 1、 Provide equipment outline drawings and technical instructions, operation and maintenance manuals, provide equipment, electronic control equipment and guide installation, provide commissioning, trial operation and quality assurance services.**
- 2、 The following materials shall be provided for completion acceptance:**

- 1) Construction drawing and design change documents;**
- 2) Qualification certificate or test inspection record of main materials and products;**
- 3) Construction survey record;**
- 4) Test and inspection records;**

- 5) Construction record;**
- 6) Intermediate acceptance record;**
- 7) Engineering quality inspection and assessment record;**
- 8) Engineering quality accident handling record.**

**The completion acceptance certificate includes the following items:**

- 1) Plane size, installation location and number of equipment, piping and accessories;**
- 2) Appearance, including equipment appearance, exposed pipe installation, etc. affect the quality of the project.**
- 3) 4h operation test should be carried out to determine the effect of the equipment.**

**3、 The warranty period is 1 year. During the warranty period, if the equipment fails or is damaged due to quality problems, we will repair or replace it for free and maintain it for life. Warranty period: from the completion of the project through the acceptance of the date calculated.**



**4、 The factory inspection: Before leaving the factory, each piece of equipment shall be installed in the factory before trial operation. Guarantee no load operation for at least 2 hours, the equipment can be ready to leave the factory without abnormal conditions.**



- ① There are no foreign bodies inside the tank, inside the hopper and above and below the conveyor
- ② Whether there is sufficient refueling in the refueling device
- ③ Oil pressure, oil tank oil is reasonable
- ④ Whether the cable is loose and falling off

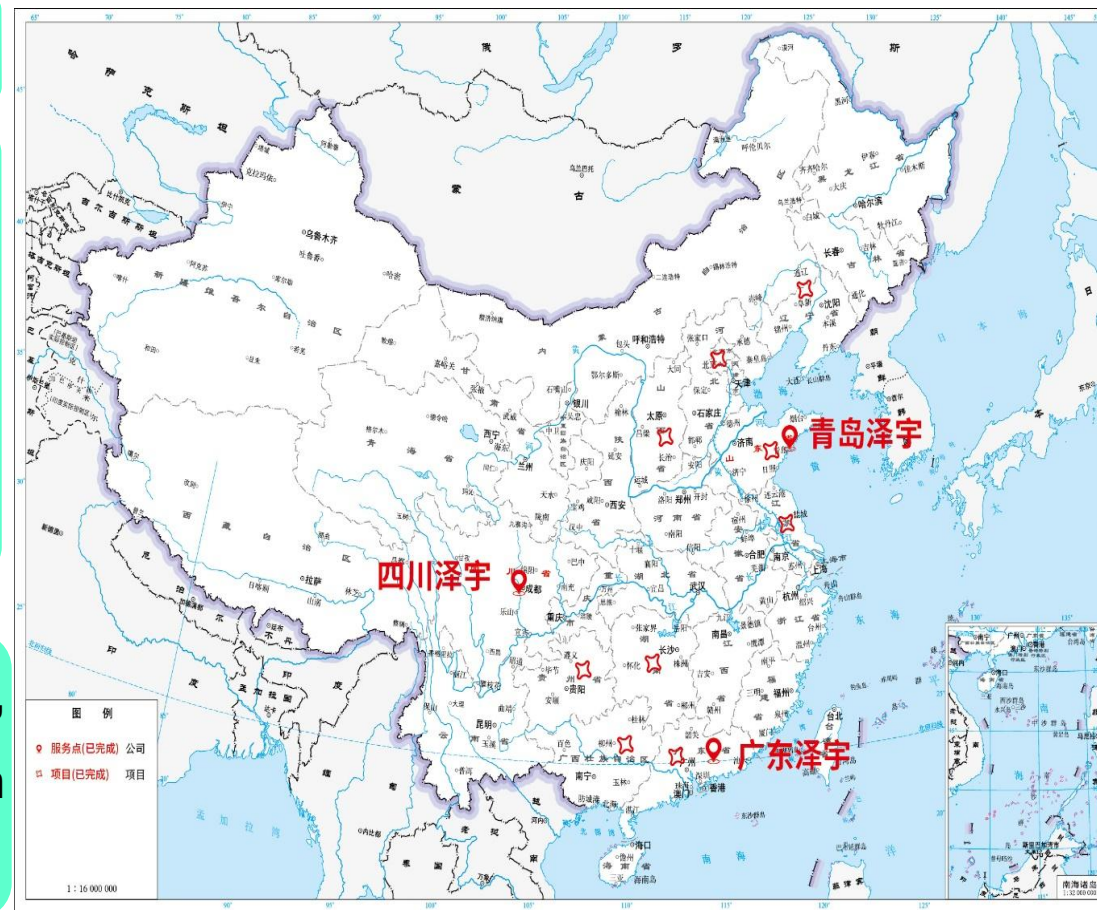
## Service commitment

CASON

**Time of arrival upon service request :(48) hours**

**Free training commitment: prior to the official delivery of the equipment, Party A shall be provided with two days of training to provide free training and guidance to Party A's operators to ensure that Party A's operators can operate independently.**

**Our company has Sichuan Zeyu in the southwest, Guangdong Zeyu in the southeast and Qingdao Zeyu in the east, facing the whole country.**



**01**

**Equipment (except wearing parts) shall be guaranteed within one year after it is officially delivered for use.**

**02**

**Respond within (4) hours after receiving the user service application; In general, maintenance personnel should solve the problem within 48 hours or treat it on site; In case of emergency, send personnel to the site for treatment within (24) hours.**

**03**

**Follow-up visit to the project once every (one year); Free technical training can be provided (2) times within three years.**






**Ensure to provide good long-term maintenance, service and lifelong technical support (on-site service).**



**Ensure that the equipment is of superior quality, free from defects in design, materials and process, and suitable for the purposes specified in the bidding documents and for the purpose of long-term safe operation.**



**During the quality guarantee period stipulated in the contract, our company shall be responsible for repairing or replacing the defective equipment free of charge for any damage, defect or failure of the supplied equipment caused by defects in design, manufacturing, materials and purchased supporting parts, so as to meet the requirements specified in the technical conditions.**

-  **In general, maintenance personnel should solve the problem within 48 hours or treat it on site; In case of emergency, send personnel to the site for treatment within (24) hours; Reasonable charge for maintenance.**



### **Tel support:**

Technical personnel through the telephone in the specified time to locate the product fault and come up with a solution to solve the problem



### **Onsite support:**

Engineers go to the site to analyze problems, develop solutions, and troubleshoot problems.

# After-sales service card



## CASON 密闭式好氧发酵罐售后

CASON密闭式好氧发酵罐保养，以下标准仅供快速查询参考\*

### CASON密闭式好氧发酵罐保养周期快速查询表

保养项目	每天	每周	每月	每季度	每半年	每年
轨道抹黄油		■				
轴承加注黄油		■				
油丝钢刷机油		■				
送风机停机油理空滤		■				
检查各润滑点是否都有油	■					
液压站每天检查是否漏油	■					
清理冷却风机灰尘		■				
检查液压油油位状态				■		
更换液压油						■
清理脱臭槽滤棉污物			■			
清理排湿管道检修孔			■			
排风机排水		■				
脱臭槽换水并每天检查补水		■				
罐体放空清理出气孔					■	

注：

质保期内无偿维护及售后服务，包括定期电话回访及在用户许可时间内四次免费专业级保养。

质保期满后根据情况合理收取配件费用及保养费用，配件费用详见清单。

如遇故障，我公司1小时内电话回访，8小时内电话解决，如需到达现场，24小时内到达现场，48小时内提供解决方案。

## CASON 发酵机装机电气检验

CASON发酵机装机电气检验记录，请严格规范填写\*

### CASON发酵机装机电气检验记录表

检验项目	实际标准	操作者	备注
配电箱外观			
配电箱内部电气元件			
上部风机接线			
上部加热管接线			
投料口电机接线			
上料架电机接线			
脱臭、排风机接线			
检查液压站油路状态			
喷淋电机接线			
下部风机1号接线			
下部风机1号加热管接线			
下部风机2号接线			
下部风机2号加热管接线			
液压泵接线			
全部行程开关接线			
四联开关接线			
单独急停开关接线			
报警灯接线			
小配电箱电源接线			
制动电源接线			



CASON 发酵机反应器调试记录表

CASON发酵机反应器调试记录表，请严格规范填写\*

CASON发酵机反应器调试记录表

调试项目		调 试 参 数
发酵罐编号		
日期		
8点温度	上	
	中	
	下	
14点温度	上	
	中	
	下	
18点温度	上	
	中	
	下	
搅拌	定时	
	连续	
1号风机	开	
	A	
2号风机	关	
	开	
顶部风机	A	
	关	
除臭引风机	开	
	A	
	关	

调试项目		调 试 参 数
除臭水泵	上	
	中	
	下	
液压		
加料情况	时间	
	方数	
	含水率	
	料距顶	
观察口	开	
	关	
放料情况	时间	
	方数	
	含水率	

异常情况记录

备注

# 售后服务卡

CASON

## CASON 发酵机试机检验表

CASON发酵机试机检验表, 请严格规范填写\*

### CASON发酵机试机检验表快速查询表(1)

检验项目	正常	不正常	无异响	有异响	无卡顿	有卡顿	方向正确	方向不正确
配电箱通电输入 380V-405V								
配电箱通电 电气元件空动作								
上部风机运转方向								
上部风机运转 有无异响								
上部加热管试升温								
投料口电机运转方向								
投料口电机运转 正反向限位开关								
脱臭、排风机运转方向								
脱臭、排风机 运转有无异响								
喷淋电机运转方向								
喷淋电机运转 有无异响								
上料架电机运转 上下方向有无异响								
上料架电机运转方向 及限位开关顺序是否正确								
下部1号风机运转方向								
下部1号风机运转 有无异响								

## CASON 发酵机试机检验表

CASON发酵机试机检验表, 请严格规范填写\*

### CASON发酵机试机检验表快速查询表(2)

检验项目	正常	不正常	无异响	有异响	无卡顿	有卡顿	方向正确	方向不正确
下部2号风机运转方向								
下部2号风机运转 有无异响								
下部1号风机 加热管试升温								
下部2号风机 加热管试升温								
液压泵运转方向								
液压泵运转有无异响								
液压泵各点阀调整								
液压阀出油口与电磁铁								
动作是否正确								
摆臂运行前后限位开关								
位置是否正确								
上料架自动上下时								
运行状态								
投料口与上料架配合								
自动运行								
摆臂手动前、后								
发酵连续运行								
发酵自动运行								
报警灯实验								
质检部:	生产部:	仓库:						