

# **DMC BAGHOUSE**

**Operation Instructions**

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## 一、Overview

The single-pulse bag filter is an advanced level high-efficiency bag type dust removal device. It is a large-scale dust removal device that handles large air volume, good cleaning effect, high dust removal efficiency, reliable operation, convenient maintenance and small floor space.

The single-pulse bag filter series provides excellent performance for air purification and material recovery in metallurgy, electric power, building materials, ore, cement, chemical, carbon black, asphalt concrete mixing, boiler and other industries.

## 二、Single-pulse bag filter working mechanism

### 1、Filter Principle:

The dust-containing gas enters through the air inlet. When passing through the ash bucket, part of the large-particle dust in the gas is separated by the inertial force and falls directly into the ash bucket. After the dusty gas passes through the ash hopper, it enters the filter bag filtration zone of the tank, and the gas passes through the filter bag, and the dust is retained on the outer surface of the filter bag. The purified gas enters the upper tank through the filter bag mouth and is discharged by the air outlet.

### 2、Cleaning Principle:

As the filtration time is prolonged, the dust layer on the filter bag is continuously accumulated, and the resistance of the dust removal device is continuously increased. When the resistance of the device rises to a set value, the cleaning device starts to clean. The electromagnetic pulse valve is opened, and the compressed air rapidly expands in the upper tank body in a very short time, and is poured into the filter bag, so that the filter bag expands and deforms to generate vibration, and the dust adhered to the outer surface of the filter bag under the action of reverse airflow flushing. It is peeled off and falls into the ash bucket. After the cleaning is completed, the electromagnetic pulse valve is closed, and the chamber returns to the normal filtering state. The cleaning chambers are sequentially performed, starting from the first chamber cleaning to the next cleaning, starting with a cleaning cycle.。

### 3、Dust Collection:

The dust that has been intercepted by the filtration and cleaning work falls into the ash hopper, and is discharged through the gate valve and the air-controlled dust-discharging valve. It is then transported out by conveyor.

## 三、Single-pulse Bag Filter Main Technical Parameters

- 1、Filtration speed:  $\leq 1.2\text{m/min}$
- 2、Efficiency: 99.7~99.9%

- 3、 Filter Bag Specification:  $\phi 130 \times 2500 \text{mm}$
- 4、 **Filter Bag Material:** Anti-static Polyester Needle Felt Filter
- 5、 Dust Chamber Resistance: 800~1500Pa
- 6、 Dust Removal Air Pressure: 0.4~0.6Mpa
- 7、 Air Consumption:  $\leq 1 \text{m}^3/\text{min}$
- 8、 Number Of Pulse Valves: 42
- 9、 Cleaning Method: Online Cleaning
- 10、 Air Leakage Coefficient:  $< 5\%$
- 11、 Box Pressure Rating: -5000Pa

#### 四、 Single-pulse Bag Filter Structure

- 1. The pulse bag type dust collector is a box structure, which is mainly composed of skeletons, ash bucket, middle tank, upper tank, blowing device, ladder and platform, inlet and outlet air duct, and pulse valve control system.
- 2. Pulse cleaning is controlled by a pulse controller, and the time is taken. Manual control is also possible depending on the user.

#### 五、 Equipment Characteristics And Preparation Profile

##### 1、 Feature

- 1.1 The pulse blowing technology is used to solve the phenomenon of low blowing blow strength, reliable work and thorough cleaning.
- 1.2 Advanced air inlet flow tube and ash bucket diversion technology to ensure uniform air distribution and smooth unloading of the sub-chamber.
- 1.3 Large-capacity pulse valve and air bag structure to meet the different blowing needs of users.
- 1.4 The filter bag is easy to assemble and has good sealing performance, so that the bag can be changed outside the machine.
- 1.5 The automatic bag cage production line is adopted to meet the needs of users with various structures (circular, octagonal, etc.), with reliable quality and beautiful appearance.
- 1.6 The use of excellent performance electromagnetic pulse valve, its fragile diaphragm life exceeds  $100 \times 10^4$  times.

##### 2、 Preparation Profile

2.1 Filter bag: It adopts anti-static polyester needle felt filter material, which has anti-corrosion characteristics and its strength is  $\geq 185 \text{N}$ . The seam is machined in the form of a bite. The interface is lint-free, flat and strong. Its performance parameters are as follows:

2.1.1 Density:  $1.08 \text{kg}/\text{m}^3$

2.1.2 Unit Mass:  $550 \text{g}/\text{m}^2$

2.1.3 Stretch Rate: 30~45%

2.1.4 Water Absorption: 0.4%

2.1.5 breathable:  $20 \sim 30 \text{m}^3/\text{m}^2/\text{min}$

2.1.6 Temperature Resistance:  $120^\circ \text{C}$

2.2 Bag Cage:  $\phi 120 \times 2450$  The bag cage is made of cold drawn steel wire and spot welded. There are steel rings fixed at intervals of 200, and the whole silicone treatment. Its characteristics: smooth surface, sufficient strength, rigidity and verticality, easy to install and disassemble.

2.3 Board: It is made of whole plate of Q235B, the hole of the flower plate is opened by punching, and the hole

is manually polished around. The hole wall is in contact with the filter bag and processed by a special process. The aperture error is small, the hole distribution is uniform, and the lower part of the flower plate does not damage the filter bag.

**2.4 Pulse Valve:** It adopts 1.5" right angle electromagnetic pulse valve with excellent performance. The valve has the following characteristics: large pressure resistance range, 0.1~0.8MPa, short starting time (0.1 s), large blowing volume, long service life and not easy to damage. The parameters are as follows:

**2.4.1 Work Pressure:** 0.3~0.6MPa

**2.4.2 Working Medium:** Compressed Air

**2.4.3 Voltage:**DC 24V

**2.4.4 Current:**0.8A

**2.4.5 Temperature:**-10°C~55°C

**2.4.6 Humidity:** < 85%

**2.4.7 Diaphragm Life:**one million times

**2.5、 Air Bag:** made of Q325 high quality steel plate. The volume is 0.25m<sup>3</sup>, which meets the requirements of the pulse valve injection volume.

**2.6、 Blowing pipe:** It is made of seamless steel pipe, and the injection hole is made by drilling the hole and then drawing. The size of the hole and the diameter of the blowing pipe satisfy the requirement of  $\sum A_n/A_p=80-100\%$ .

## **六、 Dust Collector Debugging**

**1、 Single machine debugging,** after all the installation of the dust collector is completed, all kinds of valves and equipment, such as the wall vibration motor, the ash discharge valve, the buried scraper conveyor, etc., are debugged, first manual, then electric, no loose or struck mechanical parts, easy and flexible, and has good sealing. Then carry out 8 hours of no-load operation.

**2,** the pulse controller to simulate the no-load test, first check the pulse valve, the wall vibration motor (or clear the air cannon), the smoothness of the ash discharge valve and the opening and closing of the valve is normal, then press the timing control to start the PLC automatically. The control program performs the cleaning of the whole process of each room, and should be timed and accurate. The components are operated without errors, and the controlled valve is opened and closed as required.

**3. Linkage debugging:** After the whole dust removal system is started, the system is operated under the condition of fan operation, and the second item is repeated for operation.

**4、 Real-load operation:** The process equipment is officially operated, the dust collector is officially operated to filter and dust, and the pulse controller is officially put into operation (usually 5 to 10 minutes in advance). The moving parts and valves are inspected at any time, and the operating parameters are recorded. If according to the timing control, when the resistance of the precipitator reaches the specified resistance value (such as 1500 ~ 1800Pa), the pulse control instrument should be manually turned on to clean the filter bag, and the chambers will stop after the cleaning is completed, and then the statistical resistance will reach the regulation. At the time of the value, manually turn on the pulse controller to clean the filter bag, and so on. After obtaining a smooth interval for the secondary cleaning cycle, the time data can be used as the base of the "timing" control of the programmable controller to input the programmable controller. After that, the program controller can be automatically "timed control" and officially put into operation.

## **七、 Bag filter operation management**

### **1、 Bag filter operation management**

Adhere to the operating procedures of "first open dust removal equipment, then open production equipment; stop production equipment first, then stop dust removal equipment"; adhere to the principle of simultaneous operation

of dust removal equipment and main process equipment, and synchronous maintenance.

The dust removal equipment operating procedures shall include: general rules, equipment components, main technical indicators, operational points, operational inspections, major fault handling plans and operational records. Dust removal equipment has different working principles and different structural characteristics, and its dust removal equipment operating procedures are also different.

## **2、 Operation Points**

- 1) Before the operation, check that all the equipments of the dust removal system are in good condition, and the single equipment test of each equipment is normal.
- 2) Adhere to the procedure of “opening the dust removal equipment and its attached machine, and then opening the production equipment; stopping the production equipment first, then stopping the dust removal equipment and its attached machine” to organize the operation of the dust removal system.
- 3) The specific instructions are executed according to the production schedule (manual or automatic).
- 4) When there is a special characterization of the operation process, it should be reported after the report.
- 5) The duty officer should record the running status of the shift and related data.

## **3、 Operation Check**

When abnormal sound, vibration, smoke, or abnormal smell occurs during operation, the post-treatment should be ascertained and recorded. At least 2 hours of inspection during normal operation.

## **4、 Fault Treatment**

When a fault is found, it should be dealt with in time to eliminate the fault.

- 1) The induced draft fan bolt is loose, the safety pin is broken, and the water is short of oil.
- 2) The filter bag is leaking and exceeds the standard.
- 3) The electrical line is out of order.
- 4) The ash discharge valve is hot or the sound is abnormal and the motor is burnt.
- 5) The sound of the silo vibrator is abnormal or the motor is burnt.

## **5、 Dust Collector Stop Working Notes**

Before the bag filter stops running, in addition to the need to thoroughly clean the dust, you should also pay attention to the following problems:

- 1) During the long-term stop operation, pay full attention to the cleaning and rust prevention of the fan to prevent dust and rain from entering the bearing (note the moisture resistance of the motor). The ash in the ash hopper should be removed before stopping the operation. The cleaning mechanism and the driving part should be fully oiled.
- 2) Moisture condensation often occurs in the bag room. This is caused by the moisture-containing gas, especially the gas generated by the combustion. Therefore, before the system is cooled, the moisture-containing gas is discharged and completely replaced with dry air. That is, after the process equipment is stopped, the exhaust fan of the bag filter should be operated for a period of time before it stops running.
- 3) During the operation of the bag filter, the short-term operation (empty operation) is the best maintenance method to ensure the normal operation of the dust removal system.

## **八、 Dust Collector Maintenance**

1. The dust collector should be operated and repaired by a special person. Fully master the performance and structure of the dust collector, find problems and deal with them in time to ensure the normal operation of the dust collector. The duty officer should record the running status of the shift and related data.
2. Regularly fill the oil at the rotating part.
3. Do a good job of heat preservation and rain protection in relevant places such as dust collectors and pipelines.
4. Always check the air leakage of the gap of the top cover of the dust collector, check the air leakage of the

closed ash discharge valve under the dust collector, the air leakage of the pipe flange joint, and reduce the air leakage.

5. The dust-containing gas should be evenly distributed in the dust collector to prevent eddy currents in the corners from decreasing the amount of gas passing through here to form a local low temperature and causing condensation problems

6. In the case of easy condensation, take appropriate heating measures. Such as in the dust collector ash electric heater, steam heater. Strengthen the temperature monitoring of the dust collector and dust removal system to grasp the conditions of use of the bag filter and prevent condensation.

7. It is found that the exhaust port emits smoke and ash, indicating that the filter bag has been leaked. When overhauling, open the top cover from room to room. If there is any dust on the bag mouth, it indicates that the filter bag has been damaged and needs to be replaced or repaired in time. .

8. The dust collector resistance is generally between 1200 and 1500Pa and the maximum is 1800Pa. The cleaning cycle is adjusted according to the resistance of the control cabinet.

9. The air filter of the compressed air system should be drained regularly, and the drain valve at the lowest point of the air bag should be drained regularly. If there is a gas tank, it should be drained regularly.

10. The control valve should be inspected by professionals and the electromagnetic pulse valve should be inspected regularly.

#### 九、Overhaul Of Bag Filter

1、In order to facilitate maintenance work, the necessary ladders, passages, and lighting equipment must be set up. The hand lamp power supply should be a safe power source.

2. Replace the toxic and harmful gases in the system with air to prevent possible accidents.

3. In the inspection work, in order not to cause the equipment to be activated, the operator must carry the key of the super-disc, and the plate that is forbidden to be activated on the super-disc.

4. The total power of the switch must be turned off.

5, valve maintenance management

1) Check during operation: the operating state, whether the valve opening is flexible and accurate; the operating condition of the driving device (cylinder or electric cylinder), the operating condition of the air source fitting; the sealing of the valve;

2) , maintenance during parking: deformation and wear; valve sealing;

#### 6、Ash Discharge Valve Maintenance Management

1) Check during operation: whether the seal is good; whether there is abnormal sound; whether the lubrication is sufficient; whether the dust discharge is smooth;

2), maintenance during parking: cleaning the blade dust; repairing the blade wear; adding sufficient lubricant;

#### 7、Dust Conveyor Maintenance Management

1) Check during operation: check the driving device and rotation; tighten the drive chain; turn the noise; whether the lubrication is sufficient;

2), maintenance during parking: spiral, scraper wear; remove the ash inside the cover; check the wear situation; add enough lubricant;

#### 8、Cleaning Mechanism Maintenance Management

1) Check during operation: check the cleaning condition according to the pressure difference; check whether the vibration sound is abnormal; whether the compressed air pressure and requirements are required; the operating state of the solenoid valve and the pulse valve; the action and sealing condition of the offline poppet valve; The operating state of the motor;

2) Maintenance during parking: check and confirm the cleaning operation program; offline valve switch; working state of rapping motor; operating state of solenoid valve and pulse valve;

## 9、Filter Bag Maintenance Management

- 1), the blockage of the dust bag. When the bag is clogged, the resistance is increased and can be expressed by the increase in the reading of the differential pressure gauge. Clogging of the bag is the main cause of the wear, perforation, and shedding of the bag.
- 2) Damage to the dust filter bag. The shape of the bag and the installation method and mechanism of the bag determine the position where the bag is easily damaged, and thus can be inspected and repaired.
- 3), the aging of the bag. The cause investigation must be carried out, and the elimination measures and replacement of the dust filter bag should be taken.
- 4), the old and new cloth bags should not be mixed, to avoid damage to the dust machine to work properly.