Technical data of QGW1200 outer wall shot blasting machine

Part I Processed workpieces and parameters

1	Max. Workpiece size (L*W*T)	12000*Φ(600-1200) mm
2	Max. Workpiece weight	6000 kg
3	Finish level	Sa2.5 (GB8923-88)
4	Processing speed	0.5-1.5 m/min (Frequency conversion variable speed)
5	Surface roughness	40~75 μ (Depend on abrasive size)
6	Suggest abrasive	Steel cut wire, casting alloy shot: Φ1.5~2.5, abrasive supply valve max. flow: 800 kg/min. Abrasive loss: 0.1-0.15 kg/h/pcs.
8	Electric power supply	380V, 3P, 50HZ
9	Pit requirement	Waterproof

Part II Technical data of QGW1200shot blasting machine

1	**Grooves conveyor rollers system**	Consist of	Inlet and outlet roller, Chamber inside roller
		Roller diameter	300-500 mm
		Reducer power	8*2.2 kw
		Loading capacity	1000 kg/m
		Rotating speed	0.5-3 rpm (Frequency control)
		Transporting speed	0.5-5 m/min (Frequency control)
2	**Shot blasting system**	Blasting chamber	Material of protective area: Mn13
			Material of the chamber: Q235
		Auxiliary chamber	With rubber curtains For sealing the abrasive flying out of the chamber
		Blasting turbines	Quantity: 2 units
			Blade structure: Straight line
			Blasting capacity: 2*600 kg/min
			Power: 2*37 kw
			Speed: 76 m/s
3	**Abrasive reclaim system**	Bucket elevator	Lifting capacity: 75 T/H Lifting speed: 1.21 m/s Power: 7.5 kw Qty: 1 set
		Separator	Quantity of separation: 75 T/H Air speed: 4-5 m/s Waste content: ≤1% (Full curtain and flow curtain type multistage winnowing) Power: 4 kw Qty: 1 set
		Filtering material	Polyester coated fitter cartridge
		Fan power	2*15 kw

4	**Dust removal system**	Total pressure	2100 pa
		Ventilation volume	31600 m^3/h
		Cartridge quantity	20 pcs
		Filtering area	440 m^2
		Dust falling way	Automatic back pulse
		Filtering accuracy	1 μm
		Back Pulse Quantity	10 pcs
		Dust emission level	≤90 mg/m^3
5	**Electric control system**	PLC, One-button operation system, cables, low-voltage electric, fault automatic detection alarm function, etc	
6	**Noise**	≤90 dB	
7	**Total electric power**	About 135 kw	
8	**Production time**	45 workdays	

Part Ⅲ Installation and After-sales Policies

3.1 Production and Delivery

Production is 45 workdays for the QGW1200 shot blasting machine against the down payment received.

3.2 After-sales Service

- One year guarantee time. Easily worn parts and spare parts are not included. (*stated in QGW1200*)
- Extended guarantee will be available basted on mutual negotiation.
- Whole-life technical support. Any problem during using appears, will reply within 8 working hours with technical solution.
- Wear parts and spare parts will be available through the machine life. (stated in QGW1200)

Part Ⅳ Technical specification of QGW1200 shot blasting machine

4.1. Application

QGW1200 shot blasting machine is a specially designed machine used in the surface cleaning for steel pipe. It can realize the shot blasting automatically.

4.2 Components and function

QGW1200 shot blasting machine consists of roller conveyor system, blasting system, abrasive circulation system (separator, bucket elevator, screw conveyor), dust collection system and electric control system. The surface finish level is Sa2.5.

4.2.1 Conveyor system

It consists of loading and unloading rollers, chamber rollers, connecting rollers.

● Rollers in the blasting cabinet are protected by special alloy jacket with lifetime over 4,000 hours.
● Conveyor system is driven by motors with inverter. Rollers can be controlled manually and automatically.
● Step-less speed is available. Roller conveyor could move in step with the whole machine or move faster.

4.2.2 Shot blasting system

Shot blasting system consists of blasting chamber and shot blasting machine assembly. The abrasive media like the

steel shots, grits are applied on the metal surface driven by the centrifugal force from the blades. Workpieces will be de-rusted, cleaned and roughened in blasting system to reach customer's finishing level.

4.2.2.1 Blasting chamber

In the blasting chamber, the wall is protected by Mn13 material liner, which has high wear resistant performance. Chamber inside protection plate all adopt the high strength nut fixed and pressure on the inner of blasting chamber, easy tear open outfit replacement. Prolong service life, reduce the cost and reduce maintenance frequency.

4.2.2.2 Shot blasting machine assembly

This machine has 2 set of high speed & performance blast wheels. One blast wheel has eight blades. It takes 5 to 10 minutes to replace 8 pieces of blades. Material of blades, shot separating wheel and directional sleeve is high chromium cast iron, which has long service life. Generally speaking, lifetime of blade is over 800 hours, and lifetime of shot separating wheel and directional sleeve is over 1200 hours. All wear parts are the market most universal national standard parts.

4.2.3 Abrasive circulation system

The system includes following parts: hopper, abrasive flow pipe, abrasive control valves, screw conveyors, bucket elevator, separator.

4.2.3.1 Screw conveyor

Screw conveyor consists of decelerator, screw axis, conveyor shell, bearing, etc. It is standard transverse conveying device, an important part of abrasive circulating system. The screwing blade is made of 16Mn.


This unit is responsible for the abrasive delivered to the elevator. Screw conveyor located at the bottom of shot blasting chamber, the spiral blade welding in the drive shaft. Conveyor motor through reducer drive rotary screw conveyor, send abrasive to discharge outlet, then the mixed abrasive will be collected to elevator bottom.

On both end of the screw conveyor adopts triple seal protection, plus labyrinth seal cover in the interior of the end plate, middle with oil seal protection, end plate external insulate bearing and end plate. Once the abrasive and dust out, will drop from the end plate and bearing clearance, will not enter the bearing. Screw conveyor shaft with sensors detecting means, can detect the working state. Once the shaft does not turn or other faults, can timely feedback to the PLC signal processing, and through the alarm alarm, ensure the safe operation of the equipment.

4.2.3.2 Bucket elevator

● Housing of bucket elevator is welded of steel plate.

There is a checking door for maintenance and replacing buckets at the bottom of the housing.

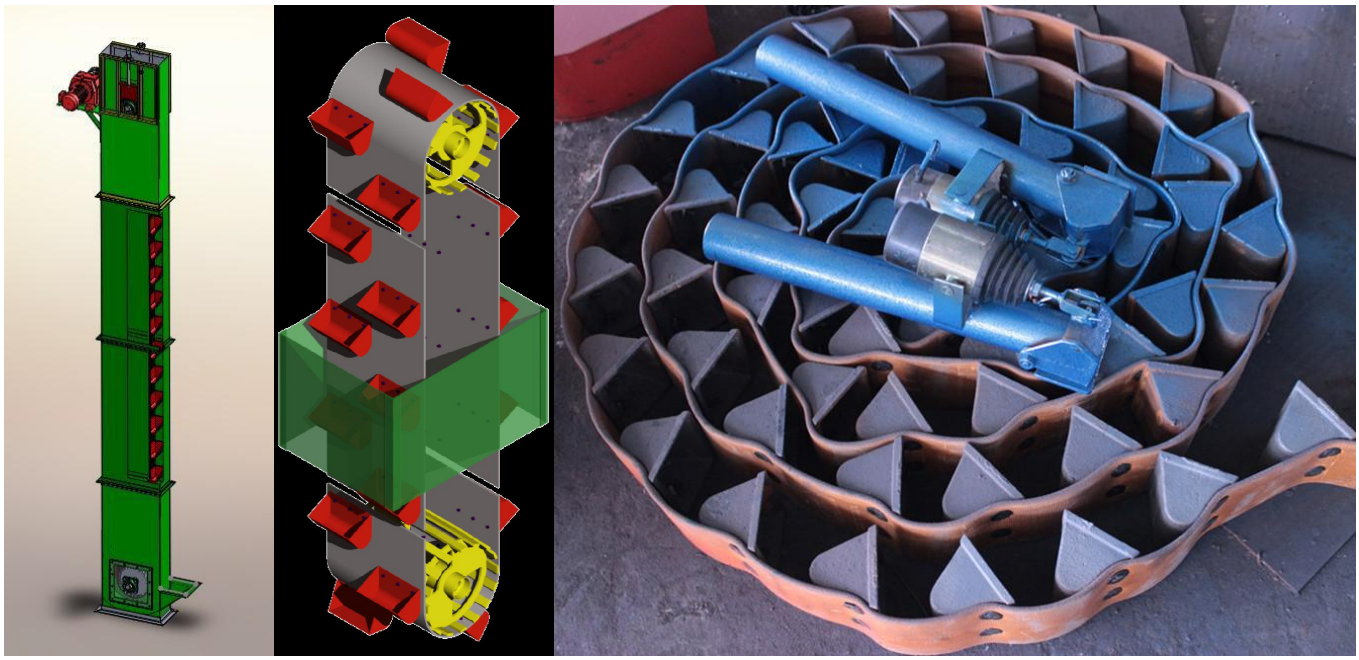
● The buckets are screwed to rubber belt which is stretched between two pulleys.

Belt material: Polyester.

● Consists of decelerator, upper and bottom barrel, belt, bucket and tensioning device, etc

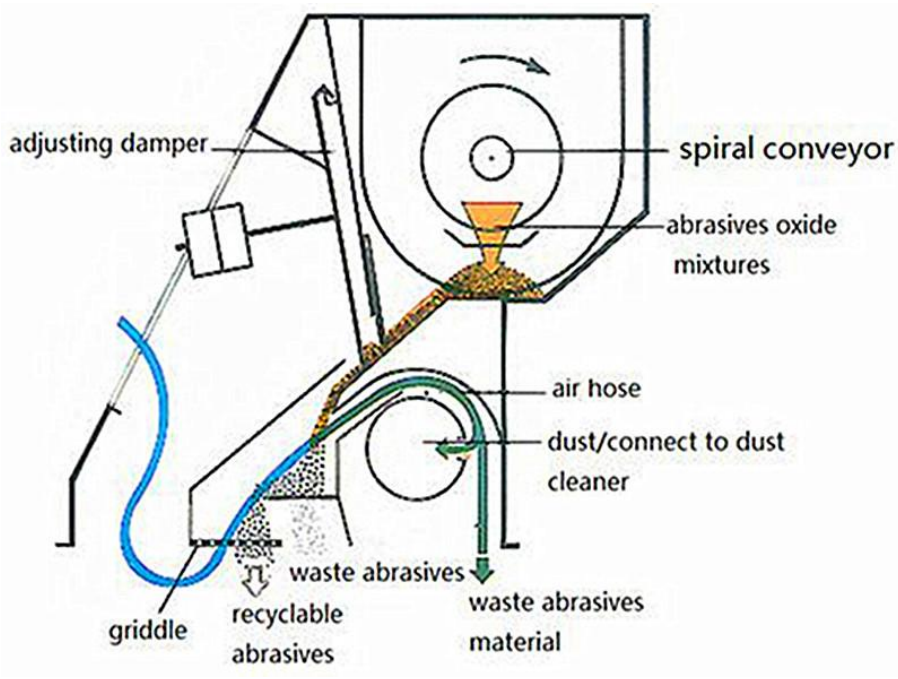
In operation, the hopper fixed on the conveyor belt sweeps the abrasive on the bottom, and send abrasive to the top, then by way of gravity centrifugation blanking. Using polyester wire core special belt, high strength, high tensile properties. Pulley using squirrel cage structure, middle is slightly raised, each spokes are processed by machining chamfering. Both to improve the promotion of friction between the belt and pulley, avoiding the old-fashioned light pulley slipping and sliding belt pulley on the injury, also reduces the lifting belt preload, extend the life; while avoiding scattered grit embed between the pulley and belt, affecting transmission.

Lifting capacity leaves 10% margin. Because the elevator blank by way of centrifugal gravity. Each time blanking, there will always be part of the abrasive down to the elevator, and therefore need appropriate to increase the lifting amount. Once the lifting belt loosening and other failure, can timely feed back to the PLC signal processing, and through the alarm alarm, ensure the safe operation of the equipment.



4.2.3.3 Separator

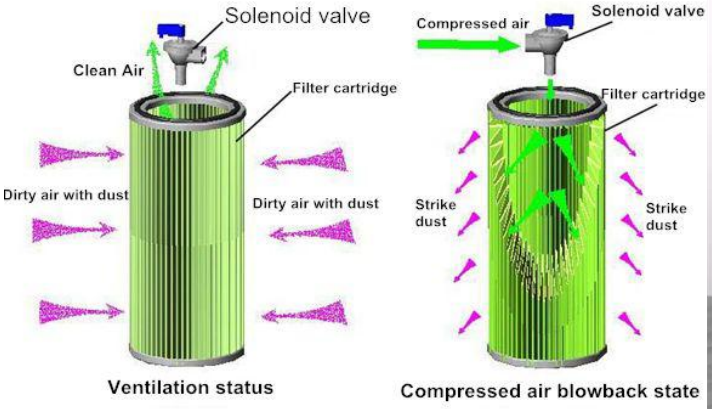
This machine uses most advanced full screen curtain air selection separator which includes selecting area, rotary screen drum, conveying screw, overfall sensor, abrasive stock bin and abrasive controlling valve. The abrasives mixture is conveyed into the separator screw via the elevator. Then the abrasive/sand mixture is carried out of the separator by the inner screw of the screening drum. The outer screw of the screening drum distributes the mixture along the separating are baffler of separator. Separating efficiency can reach 99.5%.



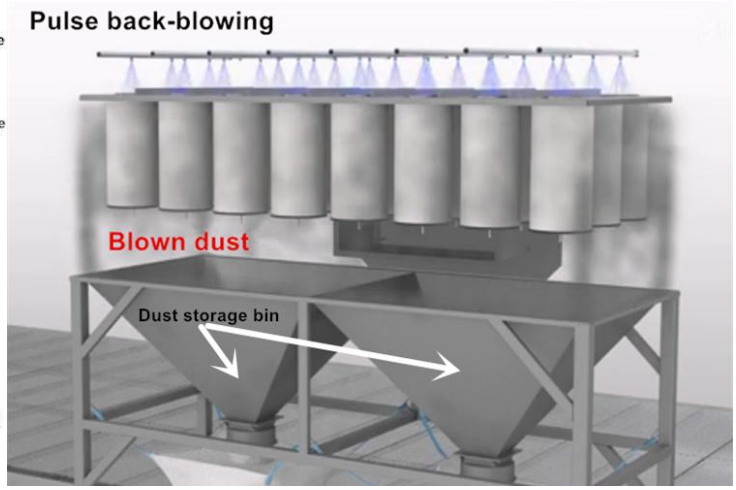
4.2.4 Dust removal system

The dust removal system consists of ducting system and filter cartridge dust collector. The emission standard can be lower 90g/m^3.

It is the final dust collecting system. Stable and easy operation, low noise, high efficiency and easy maintenance. The main fan power 30 kw, ventilation quantity is 31600 m^3/h. Pulse blowback dust removing, cartridge can be easily removed for cleaning then re-use.



Filter cartridge dust removal operating principle



4.2.5 Electric control system

- The program of the PLC is modular and can be edited.
- Two operating ways are available: manual and automatic.
- Alarm device and overload protection device are available.

The electrical control system for three-phase ac frequency 50 HZ voltage 380 V power distribution.

The machine electrical system has the following features:

The blast wheel, maintenance door, abrasive controller and abrasive circulation system are equipped with electric interlock and self-locking system to ensure the reliable operation of the equipment and the safety of operators.
This system's blast wheel running conditions adopts the ammeter monitoring control, on the one hand, can through the ammeter to protect blast wheel, on the other hand can monitor the blast of the empty cast, the phenomenon such as jam, in order to adjust the equipment working state.

Pulse detector:

Pulse detector is installed in the screw spindle nose of abrasive separator, driven pulley spindle nose of elevator and spindle nose of each screw conveyor.

Composition: ◆Proximity switches; ❖Sensors semicircular iron.

Cause:

For the elevator, the biggest cause of failure is due to belt slippage caused by loose.

For screw conveyor: may be ◆ overloaded (abrasive blockage), ❖motor thermal protection.

Part Ⅴ Main function parts and purchased parts manufacturer

The components name	Manufacturers	Place of origin
Blasting assembly	Qingdao Zhiling Machinery Co., Ltd	Qingdao
Blasting chamber	Qingdao Zhiling	Qingdao
Roller conveyor	Qingdao Zhiling	Qingdao
Separator	Qingdao Zhiling	Qingdao
Elevator	Qingdao Zhiling	Qingdao
Screw conveyor	Qingdao Zhiling	Qingdao
Hopper, Baffle plate	Qingdao Zhiling	Qingdao
Electric control system	Qingdao Zhiling	Qingdao
Low-voltage apparatus	Chint	China
Blasting turbine motor	China brand	Qingdao
Dust removal system	Qingdao Zhiling	Qingdao
Fan	China brand	Qingdao
Speed reducer	China brand	Qingdao
Bearing house	HRB & ZWZ	China

Part Ⅵ Each part of the wall thickness of the material

Name	Material	Thickness (mm)
Shot separating wheel	High chromium	Casting profiled
Directional sleeve	High chromium	Casting profiled
Blade	High chromium	Casting profiled
Combined plate	40Cr	Forging profiled
End guard plate	High chromium	Forging profiled
Impeller	40Cr	Forging profiled
Top guard plate	High chromium	Casting profiled
Side guard plate	High chromium	Casting profiled

Outside chamber shell	Q235 Steel plate	6-10 mm (Key parts with U-steel reinforced)
Auxiliary shell	Q235 Steel plate	4 mm (Welded with channel steel frame)
Elevator, separator, screw, dust collector	Q235 Steel plate	3 mm (Key parts for steel reinforcement)
Air duct	Q235 Steel plate	0.5 mm
Mass ejection area guard	Mn13	10 mm
Not mass ejection area	65Mn	6 mm
Guard plate nut	High chromium	Casting profiled
Screw blade	45Mn	6 mm

Part VII Pictures of QGW12000 steel pipe shot blasting machine pictures

Pictures