

## Rotating Hook Shot blasting Machine, H10x20GR/3WX1M/1T/IGRT (3x5,5 kW turbines)

### PRODUCT SPECIFICATIONS

#### Section I. Company Identification

##### Product Name

**Rotating Hook Shot blasting Machine  
H10x20GR/3WX1M/1T/IGRT (3x5,5 kW turbines)**

##### Distributor

##### GritSablare

Headquarter: 10 Eliza Zamfirescu Leonida Street, Bucharest  
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#### Section II. Advantages

##### Summary

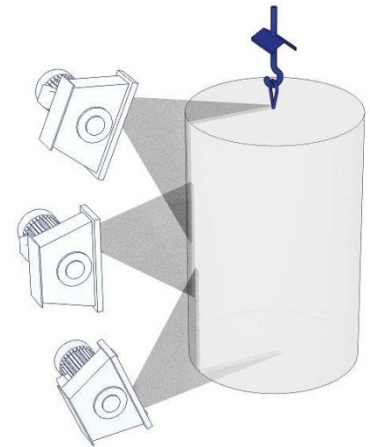
- Monorail conveyor
- Throwing wheel WX1 (3 pcs.)
- Abrasive feed control valve (3 pcs.)
- Screw conveyor
- Bucket elevator, Air abrasive separator & Silos
- Trolley with rotating hook (3 pcs.)
- Hook rotation unit
- Hook translation unit

## Section I. Principle of Work

Shot blasting machines are called hook (H) type because the pieces to be blasted are suspended, bunch like or one by one, on hangers fitted to rotating hook sliding along the monorail conveyor by means of trolleys. The rotation inside the machine exposes the entire surface of work pieces to the continuous jet of abrasive from the throwing wheels.

The work cycle is the following:

- Work pieces are loaded on the hangers outside of the machine. Loading can be manual or by means of electric hoist fitted on the trolley.
- The bunch with work pieces is then transported to the inlet of the blasting chamber either manually or by means of electric trolley.
- Hook translation/rotation unit, as its name implies, automatically translates the trolley in the start position and at the same time starts rotating the bunch.
- When the bunch reaches the start position the door closes (manually or automatically) and seals perfectly the blasting chamber. The door is interlocked with the turbine starting/stopping.
- At this point the automatic blasting cycle starts. During the cycle, the bunch is continuously rotating and shifts automatically in two preset positions, in order to provide optimum coverage of all surfaces of the suspended work pieces.
- The abrasive, intercepted by an electro-pneumatic shot valve, feeds the throwing wheel on its central axis, from where the abrasive is sent to the blades and subsequently thrown violently onto the pieces to be cleaned, suspended on the hanger.
- The mixture of abrasive, burrs, sand deposits, scale and/or other impurities goes to the bottom part of the machine where, through the grate and hopper, is conveyed (by a screw conveyor or by a vibrating sieve which separates bigger impurities) to the base of the bucket elevator.
- From here the mixture is transported upwards to air cleaner (or, if foundry sand needs to be separated from steel shot, also magnetic cleaner), where dust and impurities are separated from clean and reusable shot.
- The waste is conveyed into a pipe, to be eliminated from the closed shot loop cycle, while the clean abrasive is conveyed into a silos waiting to be fed again to the throwing wheels, closing this way the shot loop cycle.
- The dust exhaustion from the blasting chamber and from the air cleaner is performed by a suction operated by the filtering (dust collector) unit.
- When the work cycle finishes, the door opens (if manual opening there is the light and noise signal that indicates when it is possible to open the door), the conveyor automatically drives the trolley to the inlet of the blasting chamber, from where it is transported (manually or automatically depending on conveyor type) in the unloading position.



## Section II. Technical Data

### Technical Data

Monorail overhead conveyor functioning	Semi-automatic	
Conveyor shape	I	
Throwing wheel type	WX1	
Diameter of throwing wheel	330	mm
Number of throwing wheels	3	pcs
Wheel revolutions	2900	rpm
Abrasive throughput per wheel	80	kg/min
Abrasive first fill quantity	960	kg
Bunch diameter	1000	mm
Bunch height	2000	mm
Hook load capacity	500	kg
Number of hooks	1	pcs
Speed of abrasive	80	m/s

### Electric Power

Throwing wheels motor power	3 x 5,5	kW
Bucket elevator motor power	1,1	kW
Screw conveyor motor power	1,1	kW
Hook rotation unit motor power	0,18	kW
Hook translation unit motor power	0,09	kW
<b>Total installed electric power</b>	<b>18,97</b>	<b>kW</b>
Three phase A.C. 380V-50Hz		

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### Section III. List of Components

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#### 1. Blast machine

1.1. Machine chamber with door	1
1.2. Monorail conveyor	1
1.3. Throwing wheel WS1	3
1.4. Abrasive feed control valve	3
1.5. Screw conveyor	1
1.6. Bucket elevator	1
1.7. Air abrasive separator & Silos	1
1.8. Inspection platform with ladders	1

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#### 2. Centralized control with automatic protection and electric power distribution

2.1. Electric equipment	1
2.2. Throwing wheels ammeters	3

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#### 3. Pneumatic equipment

1

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#### 4. Transport system

4.1. Trolley with rotating hook	1
4.2. Hook rotation unit	1
4.3. Hook translation unit	1

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#### 5. Paint

1

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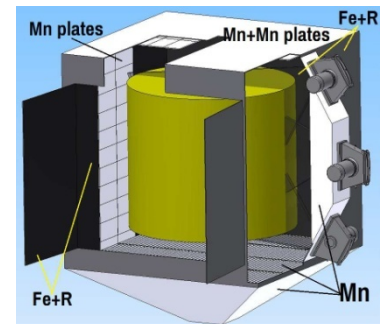
## Section IV. Constructive Features

### 1. Blast machine

- All H type blasting machines are manufactured with first rate quality materials and duly finished.
- Particular attention is paid to the abrasive action: all surfaces subject to wear are made from abrasion resistant materials. All mobile units which are located in areas where the abrasive might leak are carefully screened and protected against any possible damage.
- Machines are provided with openings in its main parts in order to enable the operator to easily carry out inspection and maintenance works.
- All H type machines comply with existing safety regulations and standards as required by the European Machine Directive.

#### 1.1. Machine chamber with door

- It is a self-supporting structure of steel plates reinforced by profiles. Chamber is usually closed from three sides by irremovable walls, and by the double folding door in the chamber front, through which material is introduced in and taken out. It is composed by the following elements:
  - Turbine bridge, on which throwing wheels are mounted
  - Ceiling, which closes the chamber from upper side
  - Hopper with grill, on the bottom side
  - Turbine bridge wall, in the middle of which the turbine bridge is mounted
  - Back wall, opposite to the door
  - Wall opposite to turbines, subject to direct hit from abrasive stream
- Turbine bridge, ceiling and hopper with grill are made from Mn steel (12-14% Mn). Ceiling and hopper above the grill are additionally lined with Mn steel armor plates in the central part, subject to direct hit from the abrasive.
- Turbine bridge wall is made from steel plates and additionally covered with antiabrasive rubber.
- Back wall is made from steel plates and covered with antiabrasive rubber. Wall opposite to turbines is made from steel plates, lined with Mn steel armor plates in the central part subject to direct hit from the abrasive, and the rest is covered with antiabrasive rubber.
- The door is made from steel plates and covered with antiabrasive rubber.

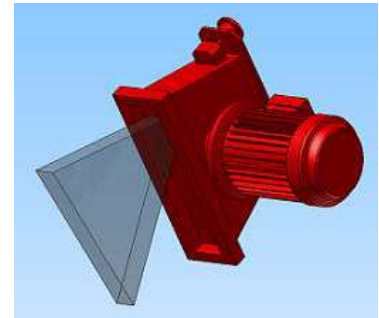


### 1.2. Monorail conveyor

- It serves for conveying the trolley from/to loading, unloading and working position. It is shaped according to customer specific logistics requirements.
- It is a sturdy steel structure made from profiles and stiffening crosspieces, fastened to the blast chamber framework, and accurately dimensioned for the maximum hook load capacity.

### 1.3. Throwing wheel

- It is composed of a dynamically balanced throwing wheel with blades. Blades are balanced with a tolerance of  $\pm 2,5g$  to guarantee vibration free operation.
- Blades direct the abrasive centrifugally from the throwing wheel onto the work piece to be blasted.
- Throwing wheel is screened by Cr-Hard cast iron armor plates, which are then enclosed in a thick steel housing. Optionally the turbine parts can be made from Hard Metal.



### 1.4. Abrasive feed control valve (electro-pneumatically operated)

- This device serves to feed the abrasive to the throwing wheel. Feeding can be checked and adjusted, and its operation is synchronized with the blasting time.
- Its casing is opened and closed by a pneumatic cylinder with dust cover. The abrasive flow rate can be adjusted by means of a manual setting device or, optionally, with automatically adjustable opening.

### 1.5. Screw conveyor

- It serves for conveying the mixture of abrasive and impurities from the hopper of the machine to the lower part of the bucket elevator. It is operated by the geared motor.

### 1.6. Bucket elevator

- Bucket elevator conveys the mixture of abrasive, burrs, sand deposits, scale and/or other impurities from the screw conveyor and/or vibrating sieve placed in the bottom part of the machine, to the upper part of the machine where cleaning operations are done.
- Its construction is from first quality iron sheets, and the mechanism is composed of:
  - Two pulleys with supports and ball bearings
  - Rubber belt
  - Set of buckets which collect and lift the abrasive mixture
  - Inspection door
- Bucket elevator motor drive has electric motor directly coupled with gear unit with helical shaped heat treated gears, enclosed in a cast iron casing and immersed in oil bath. It is coaxially fitted to the elevator top pulley with the belt tensioning device.

### 1.7. Air abrasive separator & Silos

- In the air cleaner mixture of abrasive, burrs, scale and/or other impurities is crossed by an air stream which separates, due to the difference in weight, reduced in size abrasive particles and other light impurities, from the abrasive to be reused.
- Separated heavy dust is conveyed to a rubber pipe which is closed by the gravity valve before waste disposal bin. Light dust is sucked out by the dust collector unit.
- Clean abrasive is conveyed into a storage silos inside the separator unit, waiting to be sent again to the throwing wheels. On the front side of the silos there is a tempered glass with indication of the level of the abrasive necessary for the machine to run properly. Optionally the level of the abrasive can be measured and controlled also automatically, with sensors which indicate when to add new abrasive.


### 1.8. Inspection platform with ladders

- It is a steel construction which serves for maintenance and repair purposes of the upper part of the machine. It is made according to international safety regulations.

## 2. Centralized control with automatic protection and electric power distribution

### 2.1. Electric equipment

- Best available quality on the market and completely complying with the latest edition of IEC standards. It includes the connections of the machine devices with the machine built-in terminal board. It is programmed by a logical sequence control (usually PLC programmable type with display).
- The equipment includes:
  - Electric board (IP 54), color RAL 7032, inner instrumentation support color RAL 2004
  - Logic sequence control, set to work either manually or automatically
  - Set of instruments (ammeters, voltmeters, timers, hour-counter)
  - Alarm lights for the machine STOP, acoustic and light signal for operators during the loading and unloading operations
  - Control devices alongside the machine
  - Protections: magneto-thermic type for the main switch, emergency push buttons, grounding, safety limit switch, overload and no-voltage protection for each device, over-dimensioning of the switches



RAL 7032



RAL 2004

- Power supply with internal transformer for the auxiliary devices, wires, sheaths and trunks, wires with terminal connection, complete wiring inside the electric board
- Electric motors (IP 54), finned, self-ventilating type, cage motors with external cooling

## 2.2. Throwing wheels ammeters

- They enable to check the throwing wheel load and instant control of blasting effect at any moment of blasting operation.
- When the parameters are lower than prescribed level, it means that the throwing wheels are fed with insufficient quantity of abrasive (it needs to be added) or that turbine blades are worn out and need to be substituted.

## 3. Pneumatic equipment

- It is meant to control the abrasive output to the turbines. It operates at a pressure of 5-6 bar. It is composed of:
  - Pneumatic cylinders
  - Electro-valves to control the cylinders
  - Dehumidifier with transparent cups
  - Pressure regulator and gauge
  - Nebulizer with transparent cups
  - Set of tubes and flexible pipes for connections

## 4. Transport system

### 4.1. Trolley with rotating hook

- It serves for manually transporting the work pieces from the loading position to the inlet of the blasting chamber and back.
- Trolley slides with low friction on the monorail conveyor. The hook, mounted on it, is rotated by the pinion gear spinning device.

### 4.2. Hook rotation unit

- It is operated by the geared motor and serves for automatic rotation of the bunch inside the chamber during the blasting cycle.
- It is provided with a chain with which the pinion gear on the hook couples and though operates the rotation movement.

### 4.3. Hook translation unit

- It is operated by the geared motor and serves for automatic transporting of the bunch from the inlet of the blasting chamber to the blasting position, movement between two preset positions during the blasting cycle, and movement back to the inlet of the chamber.
- It is provided with a chain with which the pinion gear on the hook couples and though operates the translation movement.




## 5. Paint

- Machine is painted with one coating of synthetic enamel paint, complying with applicable standards and highly resistant to oxidizing.
- Paint color to be agreed upon. Our standard is RAL 7035 (light grey) for housing of the machine and RAL 2004 (orange) for movable parts.



**RAL 7035**



**RAL 2004**



## Automatic Dry Dust Collector with Filtering Cartridges GR-CDR-8

### PRODUCT SPECIFICATIONS

#### Section I. Company Identification

##### Product Name

**Automatic Dry Dust Collector with Filtering Cartridges GR-CDR-8**

##### Distributor

##### GritSablare

Headquarter: 10 Eliza Zamfirescu Leonida Street, Bucharest

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#### Section II. Advantages

##### Summary

- Specially devised for installation in heavy duty conditions with requirements such as uninterrupted blasting cycle, easy maintenance and limited overall dimensions
- Easy cleaning and fast access inside of the collector
- Air flow rate: 6500 m<sup>3</sup>/h
- Filtering surface: 128 m<sup>2</sup>

### Section III. Principle of Work

- The CDR range of filters carries out a dry dust collection of the exhausted air coming from shot blasting machines. They are specially devised for installation in heavy duty conditions with requirements such as uninterrupted blasting cycle, easy maintenance and limited overall dimensions. No moving parts are involved in this cleaning system and therefore its high reliability and safety is to be remarked.
- The work cycle is the following:
  - During shot blasting inside the machine dust is created and it needs to be eliminated rapidly
  - The centrifugal fan, mounted on the filter after the filtering cartridges and properly dimensioned, has the function of creating under pressure to convey the dust through the piping lines, up to the cartridges of the dust collector
  - Cartridges are blown-off with compressed air at regular intervals, in order to detach the dust which is deposited on the cartridges outer surface, resetting their former permeability
  - Compressed air is stored in a vessel and is fed to the filtering cartridges by automatically controlled electro valve which cyclically blows off, through blow-off nozzles, one cartridge after another at time intervals
  - The dust that is filtered falls to the bottom of the dust collector where it is conveyed (by gravity or through scroll conveyor) to the waste bin from where it can be safely disposed
  - The permeability capacity of the cartridges is controlled with a dp manometer

### Section IV. Technical Data

#### Technical Data

Air flow rate	6500	m <sup>3</sup> /h
Filtering surface	128	m <sup>2</sup>
Operating temperature	room	
Cartridges	3	pcs
Filtering medium	microfiber	
Fan under pressure	2.500	Pa

#### Features of the compressed air for cartridge blow-off

Operating pressure	4 - 6	bar
Consumption	10	Nm <sup>3</sup> /h
Dew temperature (lower than the room temperature)	5	°C
Oil content (max. value, by taking into account air at 20°C - 1,29kg/m <sup>3</sup> )	5	ppm
Dust concentration out of the chimney	≤2	mg/m <sup>3</sup>

#### Electric Power

Fan motor power	7,5	kW
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## **Section V. List of Components**

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- Rigid steel plate housing with side access door for easily replacing the cartridges and dust collecting hopper-shaped bottom
  - Microfiber filtering cartridges
  - A compressed air vessel with correspondent electro valves (one electro valve for each cartridge) and blow-off nozzles
  - An electronic panel for the electro valves operation cycle control
  - A centrifugal fan
  - A fan driving motor
  - Dust waste bin
  - A tank holding the discharged condensate
  - A dp manometer displaying the loss of pressure
  - Dust discharge system by a scroll conveyor (depending on dust collector size)
-