

BLASTMAN ROBOTICS LTD

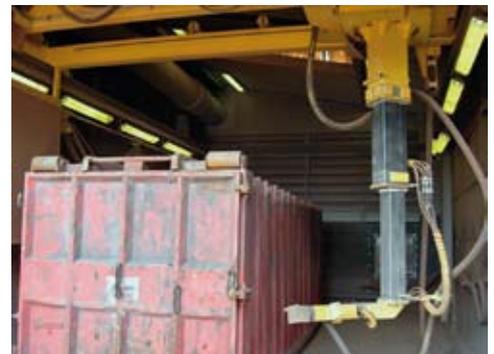


Advanced Abrasive Blasting Technology

Blastman 
Robotics Ltd.

Automated Abrasive Blasting Solutions

- *Railway Rolling Stock*
- *Wheelsets and Bogies*
- *Castings*
- *Machinery*
- *Steel Constructions*
- *Wind Turbine Parts*
- *Vehicles*
- *Trailers*
- *Containers*
- *Cranes*
- *Bridges*



Blastman Robotics Ltd

Blastman Robotics Ltd operates globally supplying surface treatment solutions. Our main products are Blastman robots and manipulators for abrasive blasting, which can be incorporated in the supply of entire surface treatment lines.

We create additional value for our customers by solving problems in surface treatment with state-of-the-art technology.

Our customers come from a broad spectrum of world-wide industry:

- *railway rolling stock manufacturers and renovators*
- *foundries and cast steel manufacturers*
- *heavy plant and machinery manufacturers*
- *road vehicle manufacturers*
- *bridge builders and other structural engineers*
- *maritime and road container manufacturers and renovators*



Blastman B20C, delivered to Sweden in 1989, still in daily use.

Our core values are:

- *Reliability*
- *On-going learning and development*
- *The ability to adapt to new challenges and situations*

History

The development of abrasive blasting manipulators dates from the early 1980's at Tampella, a large Finnish engineering company. Tampella designed and constructed the first manipulator in 1982. The first robot was delivered to Valmet in Jyväskylä, Finland in 1985.

Export began in 1986 when the first manipulator was delivered to the Tudor workshop in Sweden.

In 1988 Tampella's robot sector was acquired by Rautaruukki Oy.

Blastman Robotics Ltd was founded in 1997 by MBO to continue the development and marketing of the robots: from then the range of services also included entire surface treatment lines.

Today Blastman robots and manipulators are used around the world. With more than 25 years of first-hand experience, Blastman is the leading manufacturer of abrasive blasting robots and manipulators in the world.

Efficiency

The Blastman robot is a tireless worker, many times more efficient than any traditional manual blasting system.

In abrasive blasting the surface is blasted with abrasive medium which removes impurities and coarsens the surface prior to painting or coating.

The higher speed of the blast medium, combined with the greater quantity of the medium, gives greatly increased efficiency in the cleaning process. The amount of abrasive medium is dependent on the nozzle size: the larger the diameter the greater the mass flow. Higher pressure gives higher speed.

The high efficiency of a Blastman robot results from the high pressure, the controllability of a large diameter nozzle and non-stop operation in harsh blastroom conditions.

Flexibility

Blastman is a versatile robot or manipulator which is easily adapted to different shapes and sizes. It cleans large and complex work pieces as efficiently as small, simple ones.

All cavities and blind angles can be cleaned by directing the nozzle into the hidden, difficult areas; the oscillating nozzle further enhances the cleaning procedure.

Blastman lends itself both to manual cleaning of unique work pieces and to fully automated cleaning of serial products.

Any abrasive medium can be used depending on the need of the work piece.

The robot is programmed by operating the nozzle manually with joysticks; the next similar work piece can then be cleaned automatically.

When serial production demands extreme efficiency, the programming is carried out by means of computer simulation, thus not affecting the robot's working.





Quality

Blastman removes the risk of human error. Abrasive blasting achieves the optimal surface quality for painting or other processes. The main factors in quality are cleanliness and the correct degree of roughness.

Often the desired roughness is achieved using sharp, variable-sized medium which is highly abrasive and can only be delivered with pressurised air.

Both roughness and cleanliness are also directly affected by the correct pressure and distance of the nozzle from the work piece, and the “shot” angle at which the medium is projected.

Blastman uses the abrasive material and pressure most appropriate to the work piece; the nozzle distance and angle are continuously controlled to guarantee the required quality.



Safety

Manual abrasive blasting is an extremely hard, unhealthy and dangerous operation. The operator is exposed to noise, dust and physical strain. When working with large items, ladders and platforms are needed and the risk of injury is very high. To protect against abrasive which is travelling at more than 200 meters per second, the operator needs heavy, restrictive and protective clothing.

Accidents and work-related injuries are common with manual blasting, and delays in production can often result. Motivation in such exhausting work can be low, and personnel turnover high.

Blastman solves all these problems. When operating the robot manually, the operator is housed in an ergonomic, air-conditioned cabin using joysticks to control the robot. In automatic cleaning the robot can be monitored from a control room outside the blastroom.



Terminology

- Manipulator – a machine controlled with joysticks.
- Robot – a machine which operates automatically.

Range of products

- Gantry-type robots
- Wall-mount robots
- Special products
- Entire surface treatment lines

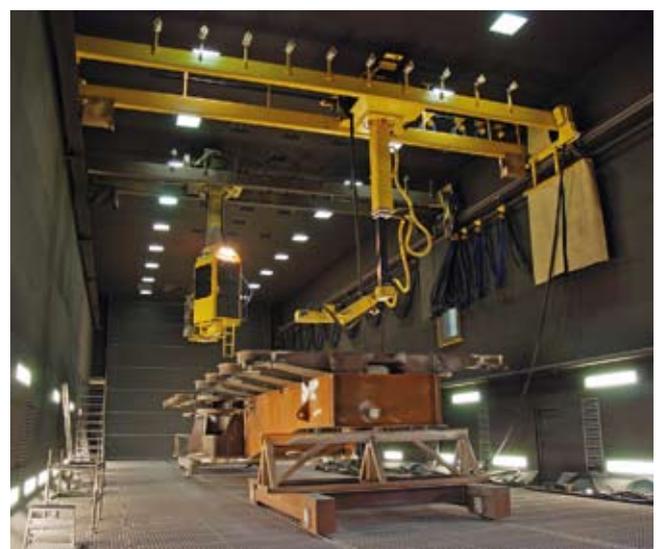
Gantry-type robots

The gantry-type Blastman B20 robot covers the entire blastroom area. Typical applications are cleaning of railway rolling stock, large steel structures and castings.

Main directions of movement are longitudinal, vertical and horizontal. Depending on the application, there can be up to 8 axes.

Each robot is tailored to fit the customer's blastroom. By choosing from a selection of different telescopic and joint booms, a suitable combination can be made. Single or double nozzles with a diameter of 12 – 19 mm and a pressure up to 10 bar can be built in to the system.

Blastman B20C has an additional control cabin moving longitudinally with the robot. The cabin can be independently turned and moved vertically and across the blastroom to cover every part of it. From the air-conditioned, dust- and sound-proofed cabin, the operator has clear sight of the work piece when programming the robot in teaching mode or when cleaning individual work pieces by manual operation.



Wall-mount robots

Whenever space is limited, a wall-mount Blastman robot is used. It is possible to have two robots working together from opposite walls, or to have the work piece turned around when using just one robot.

The main movements of wall-mount robots are longitudinal and vertical. Every model is capable of handling one or two nozzles with a diameter of 12 – 19 mm and pressure up to 10 bar.

The main dimensions and boom structures are tailored according to the blast chamber and work pieces.

The Blastman BR20 is suitable for blasting railway rolling stock and beam structures, for example. When working in pairs, robots are attached to opposite walls; the telescopic booms are built to reach horizontally across half of the chamber.

Blastman BR20C robot features an additional control cabin.

Blastman B16 is equipped with a joint boom system. Applications include, for example, blasting of containers, turbine parts, castings and freight wagons.

Blastman B10 is a wall-mount robot having a telescopic boom for vertical movement. Alternative to B16, selection depends on work piece and blastroom dimensions.



Abrasive blast machine

The Blastman abrasive blast machine is a continuously-operating blast tank with two chambers, designed for continuous work with a Blastman robot. The blast medium filling cycle is automatic and controlled by the robot. Dust and abrasive can be cleaned from the work piece by closing the abrasive valve and blasting with plain air.

The Blastman blast machine is suitable for all abrasives; maximum pressure can be up to 10 bar. If needed, the tank can be equipped with connections for two blast hoses.



Equipment for moving and turning work pieces

All equipment for moving and turning work pieces is designed according to customers' needs by creating solutions ideal for the harsh conditions of a blastroom.

Moving and turning can be a part of the robot's control system, also in automatic use.



Manlift

Blastman manlifts are specially designed for manual blasting.

Gantry-type manlift Blastman BP20 moves longitudinally, vertically and across the blastroom. It can also turn 360 degrees, enabling work anywhere in the blastroom.

Wall-type manlift Blastman B16ML moves longitudinally and vertically.

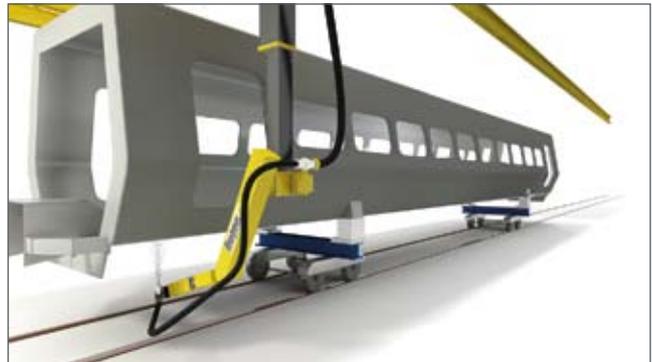


Entire surface treatment lines

Blastman has extensive knowledge of solving the multiple problems encountered in surface treatment.

Blastman delivers entire surface treatment lines. Depending on your requirements the system includes:

- Blastroom(s)
- Abrasive blasting robots
- Abrasive blast machines
- Manlifts
- Abrasive medium recycling systems
- Air conditioning
- Lighting
- Compressors
- Conveyors
- Equipment for turning work pieces
- Chambers for painting and drying



We are proud to say that, among many others, the following customers rely on Blastman's expertise and quality:

Railway rolling stock manufacturing and overhauling Examples of deliveries

Passenger coaches

Alstom, Spain

- Blastman B20 robot
- Delivery in 2009

Torzhok Wagon Factory, Russia

- Blastman B20C robot, blast chamber
- Delivery in 2006

Rail Coach Factory, Kapurthala, India

- 2 pcs Blastman B20C robots
- Delivery in 2005



Freight cars

National Alabama Corporation, USA

- Various types of freight cars
- 4 pcs Blastman B16 robots, 4 pcs Blastman B16LR robots
- Delivery in 2008

National Steel Car, Canada

- Various types of freight cars
- 1st delivery in 1997:
2 pcs Blastman B20 robots,
2 pcs Blastman BR20 robots
- 2nd delivery in 2004:
2 pcs Blastman B20 robots,
2 pcs Blastman B16 robots
- Off-line programming with a simulation application



Belorussian Railways, Vitebsk Workshop, Belorussia

- Surface treatment line for tank car refurbishment
- Steel grit blasting to remove old paint, rust and impurities
- Blastman B20C robot
- Pre-drying, blasting and painting chambers
- Conveyor and compressed air systems
- Delivery in 2002



Wheelsets

Deutsche Bahn, Germany

- Blastman BWS robot
- Complete abrasive blasting station with chamber and abrasive recycling
- Automatic programming by entering the wheelset dimensions
- Delivery in 2009

SNCF, France (Paris, Romilly, Rouen, Lille)

- Blastman BWS robot
- Complete abrasive blasting station with chamber and abrasive recycling
- Automatic programming by entering the wheelset dimensions
- 4 units for different SNCF workshops during 1995-2000



Foundries

Examples of deliveries

Componenta, Finland

- Diesel engine blocks, gear boxes
- Blastman B20 robot
- Delivery in 2009

Giesserei Kiel, Germany

- Diesel engine blocks and other heavy castings
- Blastman B20 robot
- Delivery in 2008

Alstom Power, Poland

- Cast turbine parts
- 1st delivery in 1998:
Blastman B20C robot, blast chamber
- 2nd delivery in 2008:
Blastman B20C robot

Friedrich Wilhelms-Hütte, Germany

- Diesel engine blocks and other heavy castings
- Blastman B20 robot
- Delivery in 2007

Vestas Castings

Guldsmedshyttan, Sweden

- Wind turbine components
- Blastman B20C robot, blast chamber
- Delivery in 2005

Metso Foundries, Finland

- Diesel engine blocks
- Blastman B20C robot, blast chamber
- Delivery in 1997

Fonderie Mora S.p.A., Italy

- Diesel engine blocks
- Blastman B20C robot, blast chamber
- Delivery in 1996



Energy industry

Examples of deliveries

TBEA Shenyang Transformer Group, China

- Transformers
- Blastman B20C robot
- Delivery in 2009

Martifer, Portugal

- Wind turbine parts
- Blastman B20 robot
- Delivery in 2009

Enercon, Magdeburg, Germany

- Wind turbine parts
- Blastman B20 robot
- Delivery in 2007

Enercon, Aurich, Germany

- Wind turbine parts
- Blastman B20 robot
- Delivery in 2007

EWP, Sweden

- Wind turbine tower sections
- 2 pcs Blastman B12 robot
- Delivery in 2007

Sperre Sveis AS, Norway

- Pressure vessels, oil and fuel tanks, heat exchangers and other large work pieces
- Blastman B20LW robot
- Delivery in 2007

Siemens Industrial Turbomachinery AB, Sweden

- Turbine parts
- Blastman B16 robot
- Delivery in 2004

ABB Power Technologies, Sweden

- Transformer frames
- Blastman B20C robot
- Delivery in 1989 – after two decades still in daily use in two work shifts



Steel structures and other applications

Examples of deliveries

Cimolai, Italy

- Large steel constructions
- Blastman B20C robot
- Delivery in 2008

Voith, Germany

- Paper machine parts
- Blastman B20 robot
- Delivery in 2008

Kalmar, Sweden

- Forklift parts
- Blastman B20C robot
- Delivery in 2007

Ponsse, Finland

- Forest machinery parts
- 2 pcs Blastman B16 robot
- Delivery in 2007

Wielton, Poland

- Trailer frames
- 2 pcs Blastman B16 robots
- Delivery in 2007

Liebherr Container Cranes, Ireland

- Harbour crane parts
- 1st delivery in 2000: Blastman B20C robot
- 2nd delivery in 2007: Blastman B20C robot

Liebherr MCCtec, Germany

- Crane parts
- Blastman B20C robot
- Delivery in 2007

Frinnaryds Svetsindustri Frinab AB, Sweden

- Containers
- Blastman B20 robot
- Delivery in 2005





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