

SHOT PEENING SYSTEMS





Shot peening is an important and, for safety reasons, an essential process in many industrial sectors, primarily in the aerospace and automotive industries. Peening dates back to Bronze Age armourers; although in more recent years, this technique has been used by engineers who worked the surface of a component with a « ball peen hammer » in order to induce internal compressive stress and thus increase service life.

Drive components (i.e. gears) are often subjected to the shot peening process in order to induce compressive stress, which considerably reduces the risk of fatigue cracks during their operation.

Technological requirements in all industrial sectors, especially the aeronautic and aircraft industries, are becoming more and more extensive, particularly with regard to shot peening.

FEATURES

Shot peening requires absolute accuracy and repeatability. These are guaranteed by a special, fully automatic process control with the universal robot shot peening system developed by ISTblast for some aircraft manufacturers such as Boeing, Rolls Royce Pratt and Whitney, Bell Textron and Heroux-Devtek for the repair and maintenance of all types of engine components.

A large range of engine components can be treated, and service life extended, using the ISTblast line of shot peening systems.

To increase the service life of many components such as gearboxes, drive/crank shafts, springs, turbine blades/ components it is important to keep the following variables in mind :

- angle of impact
- shot-blasting time/flow
- shot-blasting pressure (compressed air blasting)
- velocity of the media leaving the shot-blasting nozzle
- classification of shot-blasting media
- degree of surface coverage



ISTblast is in a position to offer a wide spectrum of sophisticated shot peening systems, thanks to its multiple research and development activities and in-house worldwide test centers.

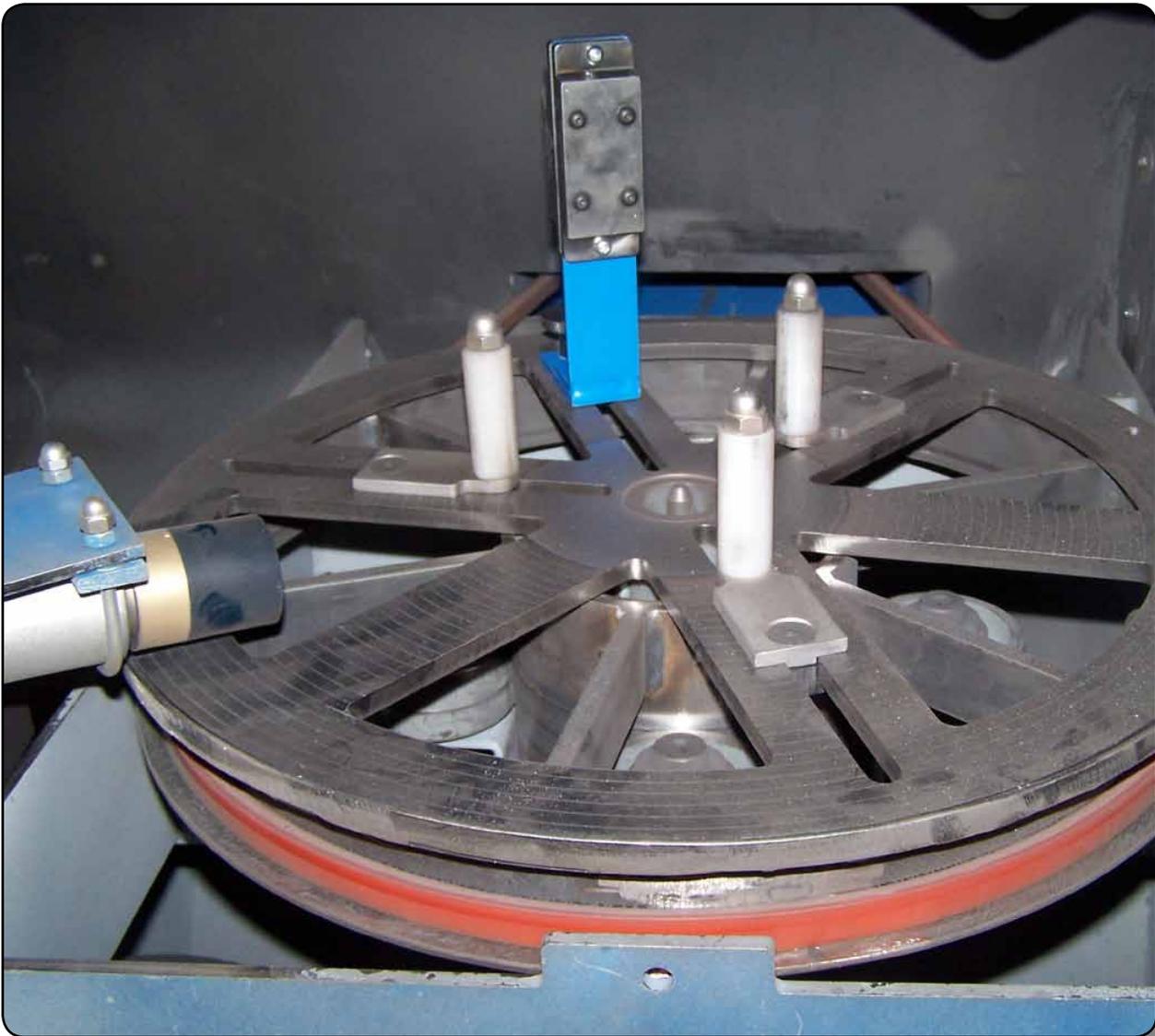
The ISTblast shot peening systems can operate automatically, PLC or computer-controlled (Supervisor) and fulfill all technical requirements and specifications.



MULTI-AXIS NOZZLES

Compressed-Air Shot-Peening System - for processing components for the aircraft industry.

The shot-blasting nozzles mounted on a axis ensure a consistent result with simultaneous rotation of the component the system is also equipped with a 360 nozzle axis to blast the inside of the pipe. The CNC-controlled system runs fully automatically, which also includes all process controls. These results mean repeatability, consistency and compliance with the most stringent of technical requirements.



SEPARATOR SCREENS

Various gearbox components for the aircraft industry, with an average weight of 3 kg and a maximum height of 400 mm, are peened in these machines. The shot peening machines are based on a 6-axis robot with two blast nozzles. During the peening process, the parts are rotating simultaneously. A throughput of 30 components per hour can be achieved. Media classification takes place in a multistage screening system. The throughput is automatically controlled by the Supervisor PC. All machine and process data is displayed and recorded.



Shot Peening Separation

Shot peening entails impacting a surface with shot (metallic, glass or ceramic) to change the mechanical properties of the metal. Eventually, the shot wears and no longer has the impact necessary to transform the surface. SWECO separators are used throughout the industry to remove the worn and ineffective abrasive to make the process more efficient. The SWECO Vibro-Energy Round Separator is ideal for all shot peening applications.

Round Separators – Standard round separators can be found throughout the peening industry. The vibratory action of the separator and precise screen mesh produce clean and efficient cuts necessary for production. Simple and efficient design, long screen life, and easy screen changes.

This system for the peening of bulky components is equipped with a 6-axis robot and a 2-axis mobile unit. The media is classified in a spiral screening system. Two types of shot-blasting media can be used. A double pressure vessel guarantees continuous shot-blasting without having to wait for it to be refilled during the processing of a component. Loading and unloading of bulky components is handled easily through the large sliding door.

SPIRAL SEPARATOR SCREENS

Profile's rotary technology allows you to reduce waste from 5-20% down to .5%, and increase operational efficiency and flexibility.

Time is money. The Rotary Spiral Separator will save you both. In-process adjustments to fine tune sorting are quick and easy and can be done in under 30 seconds versus what would have taken more than an hour of downtime and operator effort compared to other systems.

For manufacturers or users of fine shot peening materials and metal powders ranging from 40 micron to 250 micron and steel shot S70 to S780, you can manage all your separation with just one machine. The rotary gives you process repeatability and uniformity for precise media classification that exceeds industry requirements of SAE AMS 2430 standard. For manufacturers or users of glass bead and ceramic bead materials ranging from 10 mesh to 325 mesh, you can manage all your separation with just one machine. The rotary gives you process repeatability and uniformity for precise media classification that exceeds industry requirements of ASTM D1155 standard.

Standard Features

- Four turns of separation
- 14 inner flight sizes in half-inch increments from 1.5" – 8"
- Observation windows
- Adjustable flow-control
- Replaceable spiral cores
- Variable speed controls
- Vertical or horizontal discharge



CONTROLLED MEDIA VALVES – SPECS



Model 70-24 Media Flow Sensor

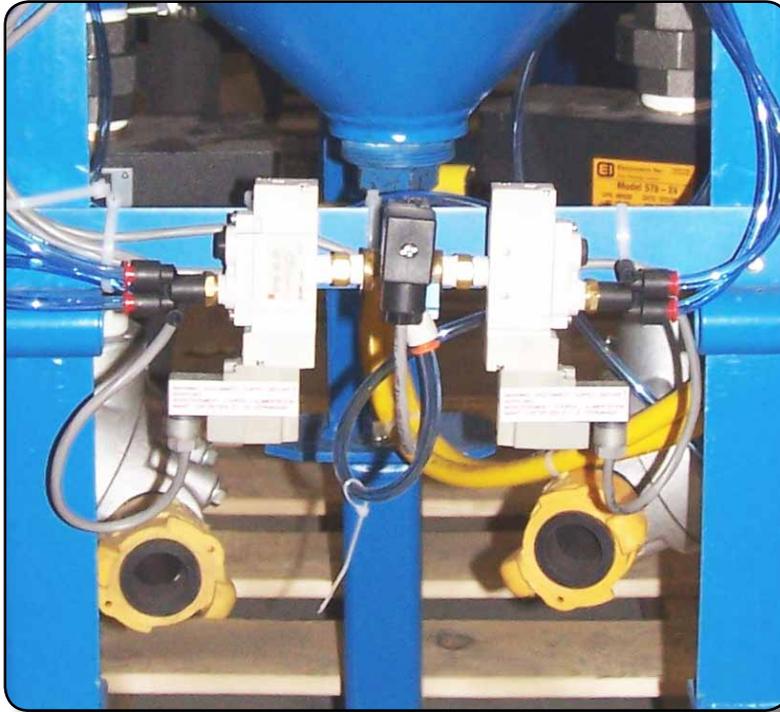
Bending Beam Flow Rate Measurement Technology provides a simple and highly accurate method of sensing the flow of particulate media. Falling media impacts the end of a thin blade. Measuring the displacement provides a direct measure of media flow rate. The displacement sensor output signal is scaled 0-10 Vdc to represent the media flow rate. Simple connections via USB port and cable to a Windows-based laptop computer and its Terminal program will allow selection of single or multi-point (up to ten points) calibration yielding $\pm 1\%$ accuracy. Additional advanced calibration can be used for applications requiring higher accuracy.



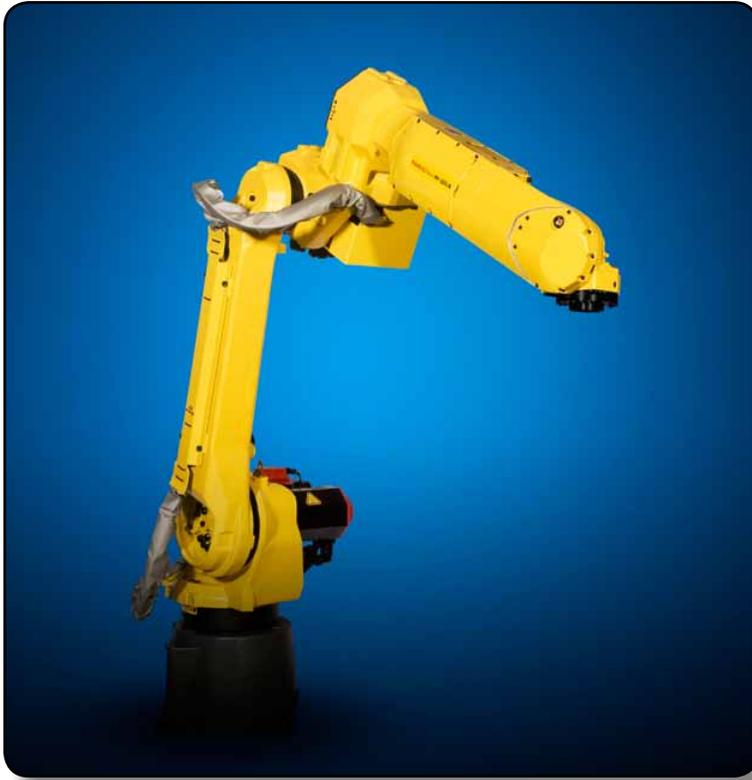
Model 700-24 MagnaValve®

The Model 700-24 MagnaValve® is a normally closed valve that regulates the flow of non-ferrous media in either direct pressure- or suction-type air blast machines. The MagnaValve's built-in sensor measures flow rate and, together with the FC-24 Controller (sold separately), provides accurate and repeatable flow rates. The valve meets the accuracy requirements of SAE AMS 2430, AMS 2432 and other aerospace and commercial specifications required for shot peening applications. Ceramic Bead, Glass Bead or Plastic Media can be used in this valve. Other non-ferrous materials, such as Aluminum Oxide (Al_2O_3), may also be used by special arrangement. Contact the factory for more information. Each valve will be pre-calibrated with customer-specified media.

CONTROLLED MEDIA VALVES



OPTIONAL EQUIPMENT



Programmable robotic manipulator arm that can deliver abrasives at precisely the right distance, for the right amount of time using the optimal shot peening techniques to ensure consistent results.



Based on a modular design, the ISTblast indexing turntables provides economical solutions for both manual feeding and also for semiautomatic or fully automatic operations.

The indexing turntables are capable of handling parts up to 27½" in diameter and handling work-pieces up to 110 lb.

MULTI-AXIS ROBOT



Various components for the aircraft, mining, casting and many other industries, are peened in these machines.

The shot peening machines are based on a multi-axis robot with one or two blast nozzles. During the peening process, the parts are rotating

A PLC control ensures a high rate of productivity and precision while the robot is peening a particular area needing treatment. A Media classification takes place in a multistage screening system.

All parameters can be entered and automatically controlled by the PLC. All machine and process data is displayed and recorded for quality control.



The peening of irregular components can be treated consistently with the use of a multi-axis robot arm and a mobile 2-axis unit. If required, two types of abrasive media can be used and can be equipped with a double-pressure vessel to guarantee continuous blasting without having to wait to repressurize the pressure vessel.

Loading and unloading of parts is easy due to the large sliding side-door.



PRESSURE VESSELS

A wide range of sandblasting pots to meet any needs.



Model 646
6.5 ft³ capacity
With Magna valves



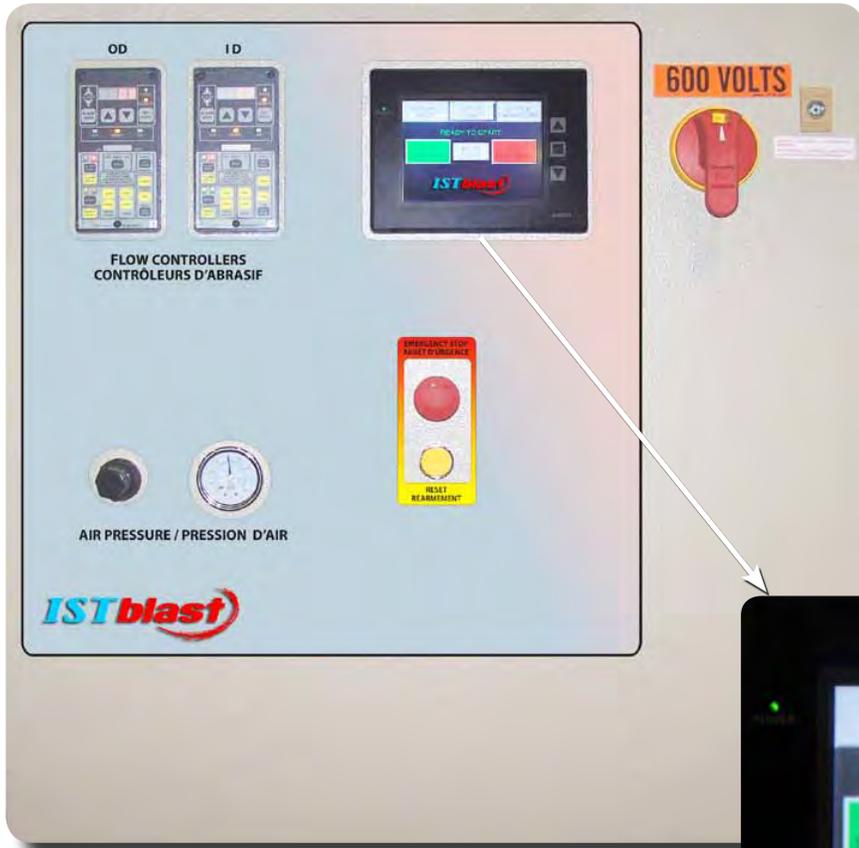
Model 1046
10 ft³ capacity

Pressure hold systems

- Reduces abrasive consumption
- Reduces moisture problems
- Lowers air consumption
- Lessens mechanical wear
- Offers smooth start and stops

ELECTRICAL CONTROL PANEL

Prewired main control panel for easy control access to all majors components, with motor overload and emergency stop button.



Main Control Panel



HMI (Human-Machine Interface)

DUST COLLECTION

A wide selection of models is available, up to 50 000 cfm.

The vertical design of the dust collector cartridges provides a more efficient system to eliminate, capture and reduce the impact of dust generated during shot peening compared to horizontally mounted cartridges.

DCM 3000 to 50000

- Continuous Venturi assisted reverse pulse jet cleaning systems
- Cartridge-type dust collectors
- Highly efficient and economical
- On-line cleaning without significant loading
- Maintains constant internal static pressure levels
- Automatic Electronic Pulse system
- Modular design allows for mounting multiple units together depending on process extraction and capacity requirements.

A warning light indicates when the cartridges must be replaced.



Automatic pulse cartridge cleaner



Simple and safe cartridge replacement system that does not require any tool.

SHOT PEENING SYSTEMS

We offer a wide choice of customized systems to meet your needs.

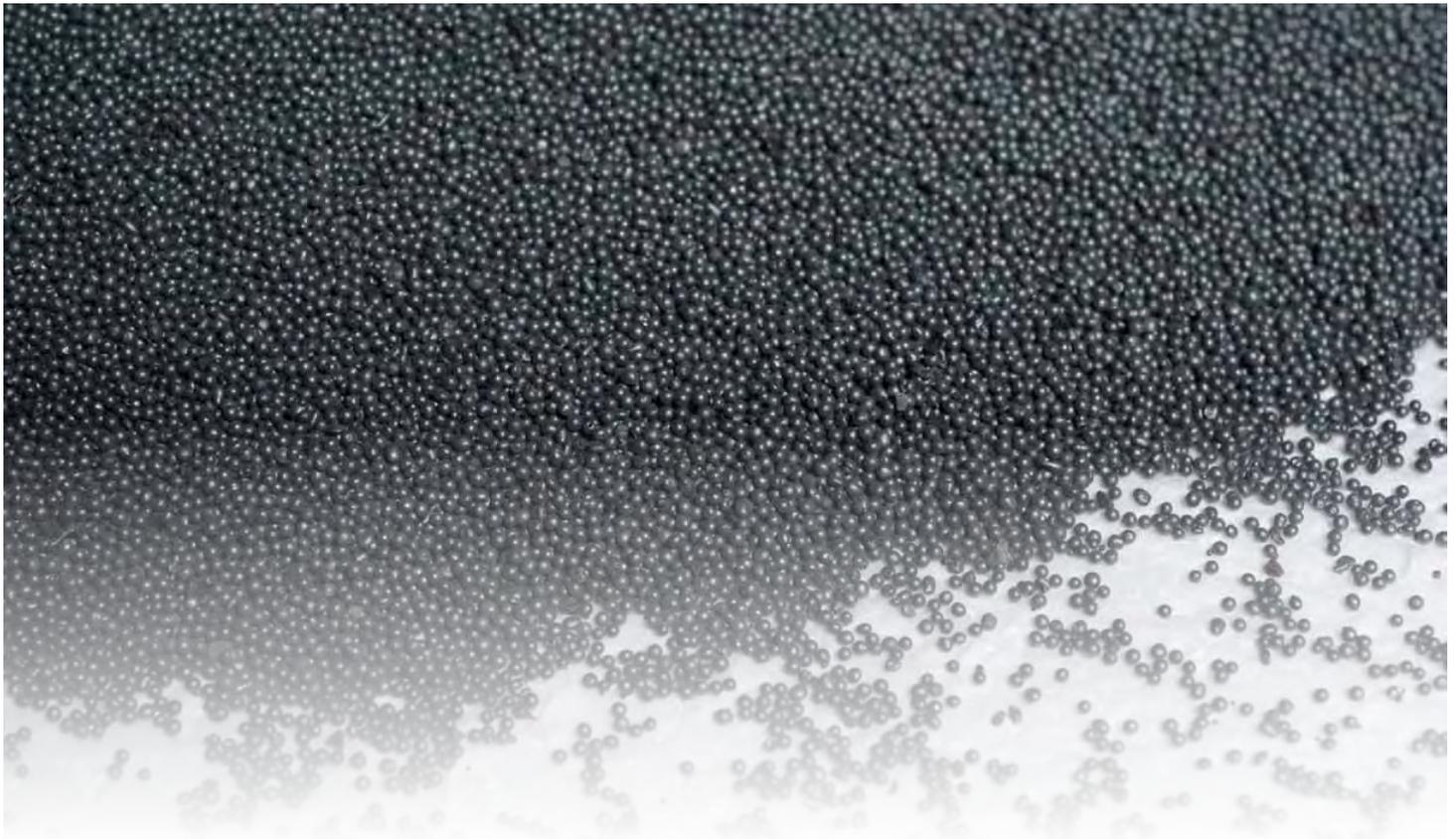


This system is perfect for large abrasive blast rooms, with unlimited recovery pits length or number, associated to a powerful recovery system.

ISTblast is a leader in its field in design, fabrication and installation of abrasive blast rooms. Depending on your surface treatment requirements, we can provide a complete turn-key solution including a new room, or provide the necessary equipment and technical support to guide you in the self manufacturing of your room. This option makes it possible to save substantially on your construction expenses.

With minimal to no maintenance required, the ISTblast Screw Conveyor System will provide a safe and efficient indoor surface treatment environment, independent of outdoor weather conditions. The result is a safer environment for the operators as well as providing protection against harmful sandblasting dust.

The ISTblast Screw Conveyor System system feature the safest and most effective process in surface treatment while recycling most popular abrasives such as glass bead, aluminum oxide, steel shot, and steel grit. Manufacturers achieve substantial consumption savings of abrasives (recycling rates of 95% and more can be realized).



Benefits of Owning an ISTblast Shot Peening System :

- Significant cost savings since abrasives can be collected, sorted and recycled
- Increase in productivity since you can blast 24/7 indoors

Industrial applications

- General Manufacturing
- Industrial Equipment
- Metal forming
- Aerospace and Aviation
- Rail and Transit
- Marine
- Automotive
- Petroleum

INNOVATIVE AND LEADING TECHNOLOGY

Founded in 1978, International Surface Technologies (IST) is a North American leader in abrasive blast rooms, sandblasting cabinets and portable sandblasting equipment. The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service.

Working closely with qualified distributors and abrasive users, IST offers systems, products and technologies that set the quality standard in a wide range of surface treatment applications. IST provides equipment for a wide range of industries for preparing surfaces to receive paint applications or for strengthening surface profiles to resist wear and tear.

IST's ongoing investment in abrasive blasting equipment and research and development will continue to provide innovative solutions to a diverse global market. Call today for product information, to request a demonstration or for a free quote.

