



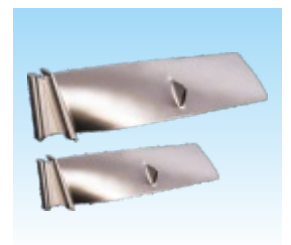
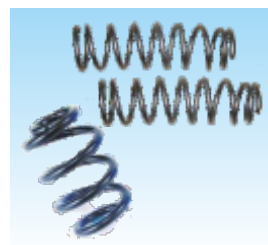
**MEC SHOT BLASTING
EQUIPMENTS PVT. LTD.**

[An ISO 9001:2015 & 14001:2015 Certified Company]

Shot peening

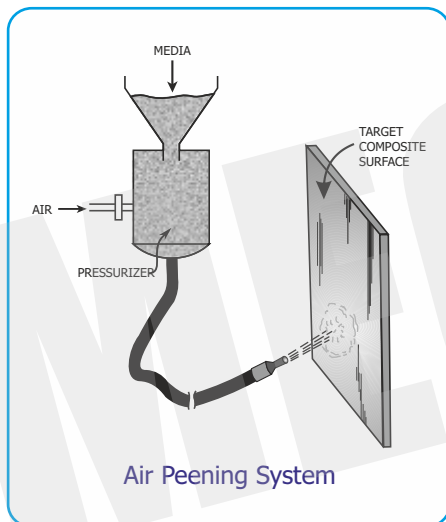


Multi Axis Customized Shot Peening Revolution

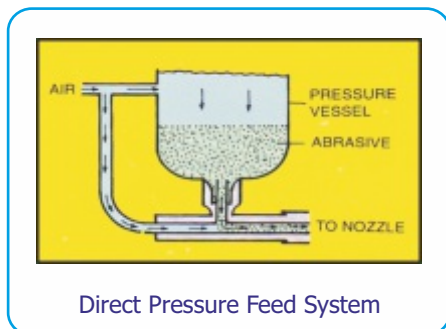


SHOT PEENING REVOLUTION

Shot peening, a cold mechanical process or technique to improve the fatigue strength of substrate by air blasting with small spherical balls. Small dimples are formed on the surface of the peening part by the striking tinny spherical balls. There by producing a layer of high magnitude compressive residual stresses. This phenomenon creates compressive stresses under the top surface of substrate and relives tensile stresses. The tests have resulted in increase of fatigue life of the job.

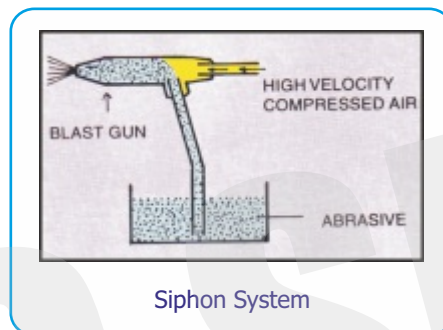


To achieve the repeatability & Accuracy in Shot Peening Technology the System Automation of machine being used plays the vital roll. Mec Shot has recently have manufactured



few more shot peening machines for various applications.

A suction blast system works by delivering a flow of compressed air to an air jet mounted in the back of the gun body. The air acelerates out from the air jet which increases the velocity pressure and decreases the static pressure, thus creating a partial vacuum within the gun body.



The simple design and operation a machine using the suction system can have many nozzles. Machines using suction blast systems also have lower capital cost as there are less control valves and no pressure vessels required.

Suction systems are used for medium and low intensity peening, typically 2N to 14A.

Gravity suction systems can provide slightly higher intensities than normal suction up to 15-17A. They can also use larger shot such as S-330 or CW-41.

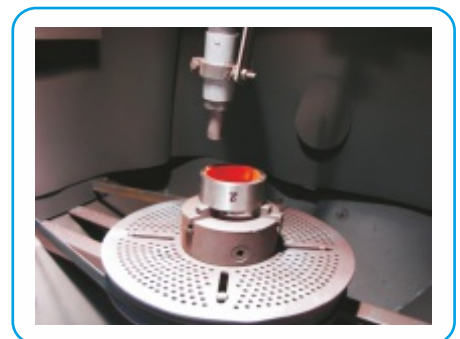
In a direct pressure system the shot is stored on a pressurized vessel, the pressure "pot" and is metered into the compressed air stream through an orifice plate or shot flow valve at the bottom of the pot.

Direct pressure systems can be used for low or highest intensities, up to 30



A or more and are more efficient in their air usage; 2.5 times better than a suction system. They provide a reliable shot stream and can be used with lance nozzles for internal peening.

To overcome the problem of stopping the process to refill the pressure pot, a dual pot system can be used. In this type of system another pressure vessel is mounted above the blast pot, with a valve in-between the two. When blasting starts the lower blast pot can pressurize and blast in the normal way. The upper pot can stay depressurized with the dump valve open and receive the shot recovered from the booth.



AIRLESS PEENING



"MEC SHOT" a name in shot peening machine manufacturer has introduced a new wheel in Air less which gives an increased pattern area. The casing is protected with wear resistant liners. Whole wheel assembly is designed in such a way that it is compact & easy for maintenance. The wheel operates on vibration free conditions making low noise level. Wheel is coupled directly with motor shaft.

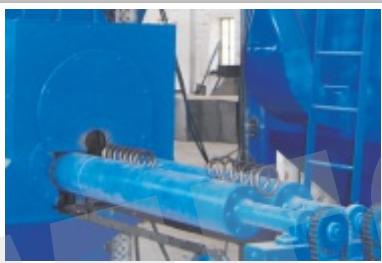
The wheels contain a number of straight blades feed spout, the control cage and the impeller.

The control cage is an important part of the system, as this part control the hot-spot. Wear on the control-cage means a deviation in the peening pattern, and thus a decrease of intensity.

The impeller "distributes" the abrasive in equal amounts over the rotating blades. Blades are normally produced from a cast alloy and are subject to wear. Wear on the blades also gives deviations to the parameters and thus a decrease of intensity. The machine body housing is made from a steady construction, completely protected on the inside with wear resistant steel.

Mec Shot has introduced recently in a wheel type blast peening machine a new Magna Valve, an automatic media regulator:

- To eliminate maintenance required for the air cylinder that operates the mechanical Soundabrator valve.
- To provide an automatic alarm to alert the operator to replenish the shot/grit supply.
- The Magna Valve has no moving parts; it operates on a magnetic principle. A permanent magnet is used to hold the shot in the Magna Valve. When there is no power applied to the Magna Valve the shot does not flow, due to the holding power of the permanent magnets. This also prevents dependence on Amp Meters as the meters indicates loading of Motors.



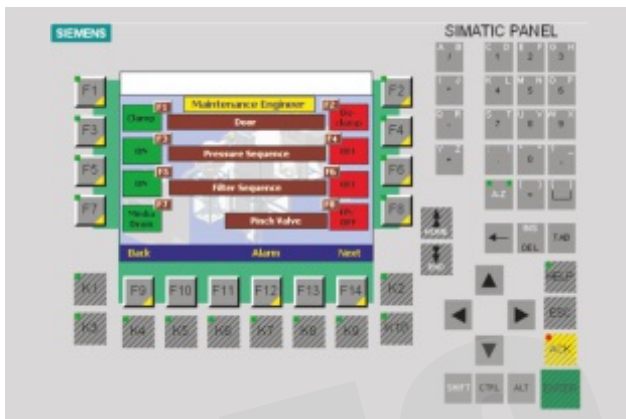
7 AXIS CNC ROBOTIC SHOT PEENING MACHINE FOR TURBINE BLADES

BHEL, Hardwar manufacturers & overhaul turbine blades & rotors for gas/steam turbine/hydro power project.

Mec Shot designed, manufactured, installed & commissioned a Robotic Shot Peening Machine for Turbine Blades. A Shot Peening Cabinet, with a acoustical enclosure and 6 Axis Industrial Robot for shot peening of Turbine Blades. The machine is fully programmable. A Turntable interpolates with industrial robot and provide

7 adjustable axis. The nozzle is mounted on Robot Arm to provide even intensity and coverage over the width, length and height of the part envelope. Special cloth is provided to protect the robot arm.

From enclosure shots are conveyed by Reclaimer / Cyclone to remove dust and other contaminants, the media is passed through two stage classification. At first stage, Size Classifier separates the media according to size. After size classification, media is transported by bucket elevator to second stage "Shape Separator" so that media with a perfect spherical shape is passed to Double Chamber (Continuous Pots) Penning Machine. The dust particles get trapped in Filter Elements in Dust Collector & the clean air escapes in the atmosphere.



Machine MMI with touch screen is operator friendly. Required information & displayed for operating, servicing and maintenance as per job code.



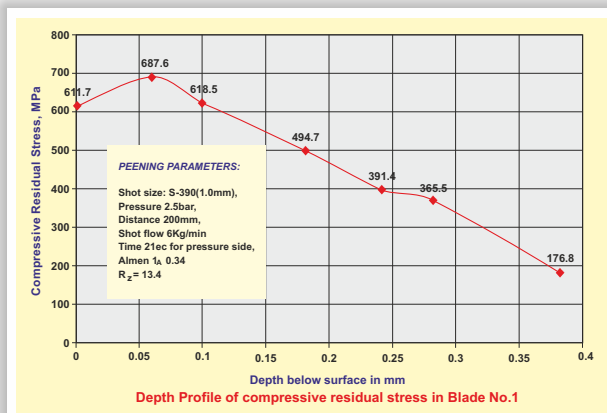
Shot Shape Classifier



Magna Valve for Media Flow Control



Turbine Blade



7 AXIS CNC ROBOTIC SHOT PEENING MACHINE FOR AERO ENGINE

Impeller, drive shaft & other components of Helicopter Jet Engine, are require to be shot peened during manufacturing and servicing.

Mec Shot recently manufactured & commissioned Automated Shot Peening with acoustical enclosure, 6 Axis Industrial Robot located outside the cabinet & Rotary Head for Internal Peening of Aircraft components. The machine is fully programmable and operates in Auto Mode. The front door equipped with CNC Turntable interpolates with industrial robot to provide total of 7 adjustable axis.

The nozzle is mounted on Robot Arm to provide even intensity and coverage over the width, length and height

of the part envelope. From enclosure shots are conveyed by Reclaimer / Cyclone to remove dust and other contaminants, the media is passed through stage classification. Size Classifier separates the media according to size and is passed to Double Chamber (Continuous Pots) Peening Machine. The dust particles get trapped in Filter Elements in Dust Collector & the clean air escapes in the atmosphere.



Shot Classifier



PLC Control Panel



Pressure Tank



Magna Valve



Rotary Head



CNC ROBOTIC SHOT PEENING MACHINE FOR AEROSPACE COMPONENTS

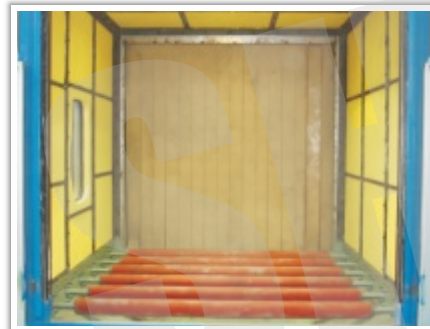
A Robotic machine for shot peening of various components of aviation industry, in which the small components are placed on the Turn Table manually & clamped and Bigger /lengthier components kept on the idler roller and brought in the reach of the Robot .

Air Crafts landing gears absorbs the shock during landing and take off. The repeated impacts load received by landing gears and

increased fatigue life shot peening is mandatory. A Blast Nozzle or Rotary Lance mounted on robotic arm, completes the pre-programmed operation. The shot peening media get re-cycled in the reclaimer through size & shape classifiers and fed to the continuous blast generator through deflector valve and storage hopper. The fine dust get trapped over filter cartridge & get cleaned through reverse jet action in dust collector.



Robot Arm



Infeed Roller Conveyor



PLC Control Panel

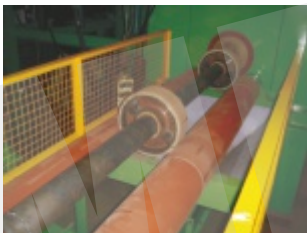
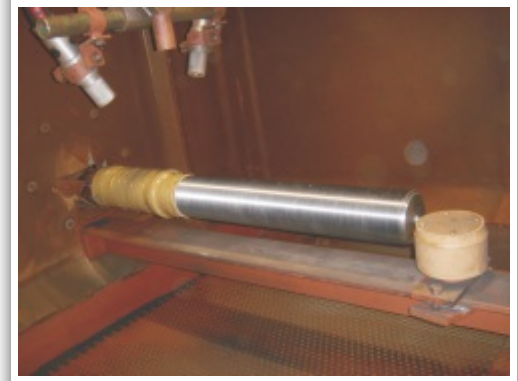


SHOT PEENING MACHINE FOR STRAIN RODS

Mecshot had carried out trial shot peening on mall threaded samples before offering the equipment for inspection, this was necessary so that during actual trials on strain rod of Sigma 150 are not hindered. Trials have been conducted using S170 & S110 shots required intensities have been achieved practically & verified theoretically.

The Machine operates on direct pressure principle of shot peening. The blast generators are of continuous type fitted with dual pinch valves and mixing tubes. The blast generators are of continuous type fitted with dual pinch valves and mixing Tubes.

The operator places the job on rollers. The rollers rotates the job. Blast guns move horizontally, thus peening its external surface. Used abrasive and dust created during blasting is sucked through suction hose to reclaimer where abrasive is reclaimed and collected via classifier in a storage tank for recycling and the dust is carried ahead and collected inside pleated bags and clean air is discharged into the atmosphere. The operator has only to load and unload the job on and from the rollers.



SHOT PEENING MACHINE FOR SMALL & MEDIUM TURBINE BLADES

Shot Peening of turbine blades root portion of 40 mm width and 12 mm height on both side for specified shot peening intensity .

The equipment operates on the suction principle of abrasive blasting. The vacuum created by the compressed air issuing out of an injector lifts the abrasive from cabinet hopper to the nozzle at the nozzle in the blast guns. The lifted abrasive gets mixed with the compressed air in the blast guns to strike the job to be cleaned. The operators place the job on spindle / satellites. The indexing turn table carries it into blast chamber where satellite of the timing belt. As job rotates, through friction of the timing belt. As job rotates, blast guns move vertically across the jobs, thus cleaning its surface. The media is carried into the Reclaimer for recycling whereas fine dust goes into the dust collector and clean air is discharged into atmosphere. The operator has to load and unload the jobs on and from the satellites.



CNC SHOT PEENING MACHINE FOR CYLINDER BLOCKS

MEC SHOT has manufactured a Acoustic Dry Shot Peening Machine for Earth Movers Industry. The machine operates on the direct pressure feed principle where pre masked Cylinder Block mounted on a work car get shot peen automatically in a sequence. The nozzle reciprocates by XY Manipulator. Speed of work car, the reciprocating nozzle is variable with AC Drive Units & reciprocating stroke is adjustable by limit switches. The shot flow is controlled using Magna Valve.

The operating sequence is preprogrammed through PLC. The spent media get reclaimed by Bucket Elevator. Shot get sized & classified for the shape in Vibrating Screen and Shape Separator where broken shots get separated from spherical shots. The classified shot get transferred in Pressure Vessel for re-use. The dust particles get trapped in Filter Elements in Dust Collector & the clean air escapes in the atmosphere.

CYLINDER BLOCKS OF EARTH MOVERS



Rock Drill Bits



CNC SHOT PEENING MACHINE FOR ROCK DRILL BITS

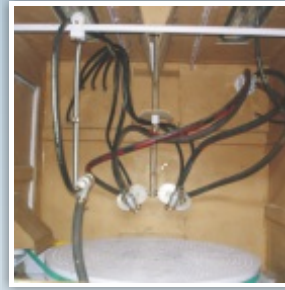
MEC SHOT Indexing Type CNC Shot Peening Machine for Rock Drills. The mechanical nozzle reciprocation system with pre-programmed automation enhances the fatigue life of Rock Drills. To achieve uniform shot peening intensity and finish it is essential that shots are periodically classified, for shape also. Shot Separator is suitable for separating usable shots from a charge of used shots, containing round shots as well as broken grits. Used shots are charged in a hopper. Usable sized shots/ grits are then discharged at the top of a spiral separator.

This mix rolls down along the spiral and get separated into round shots and broken or malformed shots. Round shots are transferred into dual pressure pots for reuse. The dust generated get trapped on cartridge filter element in dust collector and clean air is discharged in environment.

Wet Ceramic Beads Shot Peening Machine for Aeroengine Parts

MEC SHOT Wet Ceramic Beads Peening Machine to shot peen the one side of Blade's Aerofoils area. The machine operates on the suction-induction principle of Wet Abrasive Blasting. The fine particles are suspended in liquid, usually water and is then pumped into the blast Guns as slurry. At nozzle, the slurry is introduced into air stream and propelled against job. The glandless slurry pump is used to feed the slurry at positive pressure into the blast gun. The operator places job on turn table mounted on work car. The work car slide in and out on track extension. The works car carries the turntable into cabinet. The shot peening of job is accomplished automatically through Horizontal reciprocation of guns. Moreover, carrier can be positioned up and down by vertical gun positioning arrangement. One gun has been provided of manual touch up of blade.

The slurry containing zirconium shots strikes the work piece to shot peen. The mist collector keeps removing the mist from the cabinet, thus maintaining a good visibility.



DRY SHOT PEENING MACHINE

MEC SHOT has manufactured a Dry Shot Peening Machine for Aviation Industry. The machine operates on the suction principle of abrasive blasting. The job is mounted on Revolving Turn Table in a fixture. The guns are mounted on stand



which reciprocates by XY Manipulator. Speed of Revolving Job and the reciprocating guns is variable with AC Drive Units. The reciprocating stroke is adjustable by limit switches. The operating sequence is preprogrammed through PLC. Vacuum created by the compressed air issuing out of an injector lifts the abrasive from storage tank to the nozzle in the blast gun. The lifted abrasive gets mixed with the compressed air in the blast gun to strike the job to be cleaned. Provision for varying the ratio of air & blasting media.

The operator places the job on fixture mounted on turn table. The peening will be accomplished by XY Manipulator maneuvering the gun. Used abrasive and dust created during blasting are sucked through a suction duct to reclaimer, where usable grit is reclaimed and collected in a storage tank for recycling and the dust is carried ahead and collected inside fabric bag dust collector to keep environment eco-friendly.

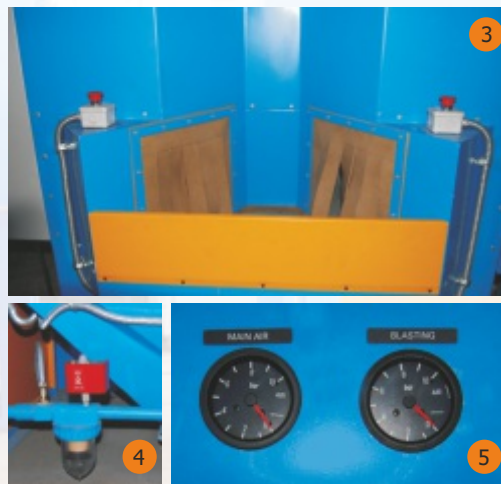


Shot Peening & Cleaning Machine for Impeller / Turbo / SUPER Charger

The Impeller/Turbo/Super Charger of the different sizes and shapes are shot peened to increase the fatigue life when in use. These Super Chargers are required to be cleaned for removal of Carbon / Foreign material without effecting surface integrity and finish.

MEC SHOT has developed Shot Peening Machine based on suction induction principle. The fine particles are suspended in liquid [usually water] and is then pumped into the Blast Guns as slurry. At nozzles, the slurry is introduced into air stream & propelled against job.

The machine is Rotary Indexing Type having No. of satellites for placing the Impellers/Turbo/ Super Chargers on the fixtures. The indexing satellites carries the fixtures into the blast chamber where it Starts rotating at blasting station. The reciprocating mechanism with multi blast gun is provided for covering the entire surface of the fixture, thus cleaning the surfaces of the Impellers/Turbo/Super Chargers. The machine incorporates precise controls of blasting parameters to achieve high performance.



- 1 Machine Full View
- 2 Cabinet Inner View
- 3 Cabinet Front View

- 4 Air Inlet Pressure Switch
- 5 Air Pressure Gauges
- 6 Pleated Bag Dust Collector

SHOT PEENING MACHINE FOR COIL SPRING

Mec Shot manufactures shot peening machine for the coil springs . In tumbler type shot peening machine a batch of springs tumbles inside the tumbler for preset period. While conducting shot peening of spring it is important to aim the shot inside of the coil. In an effort to discover the optimum peening angle which would allow a collision to evenly impact the inside the coil spring. Due to Shot peening on coil spring, the fatigue strength and life cycle increases dramatically. The pneumatically reciprocating & springs tumbling in rubber belt get shot peened.

Online shot size classifier has been provided to segregate fine & broken shots. Usable shots are continuously transfers to pressure vessels



AIRLESS BELT TUMBLER TYPE SHOT PEENING MACHINE

Mec Shot manufactures Airless shot peening machine for the automobile components. In tumbler type shot peening machine a batch of springs tumbles inside the tumbler for preset period. While conducting shot peening of spring it is important to aim the shot inside of the coil. In an effort to discover the optimum peening angle which would allow a collision to evenly impact the inside the coil spring. Due to Shot peening on coil spring, the fatigue strength and life cycle increases dramatically.

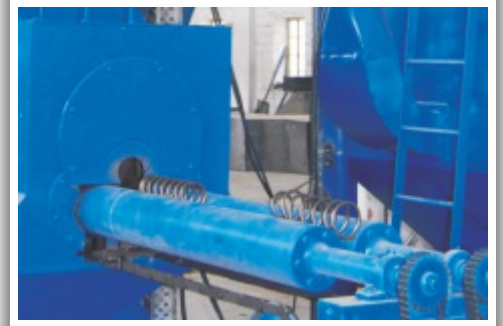


AIRLESS SHOT PEENING MACHINE FOR COIL SPRING

Mec Shot has manufactured an Airless Shot Peening Machine for shot peening of coil spring. The machine is fully automatic. Operator has to place the coil springs over the adjustable leaner rollers on which it rotate and travels forward. The traveling springs enters in the cabinet where a pair of wheels shot peen the coil springs.

After selecting the peening switch the shots will be fed automatically

by sound-actuator valves for both the wheels operated by solenoid valve and pneumatic cylinders opening mechanism. Shots are propelled on the rotating coil Springs at high velocity thereby peening it. Dust generated during peening is being sucked with media or shots in media trap where shots are separated from the fine dust. the dust further passes in the dust collector and get trapped in filter bags and clean air is let out in the atmosphere there by keeping the environment eco friendly.



SHOT PEENING JOB SHOP FACILITY NOW IN MEC SHOT

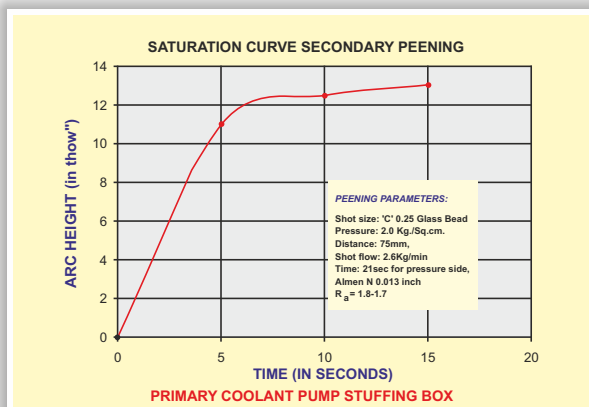
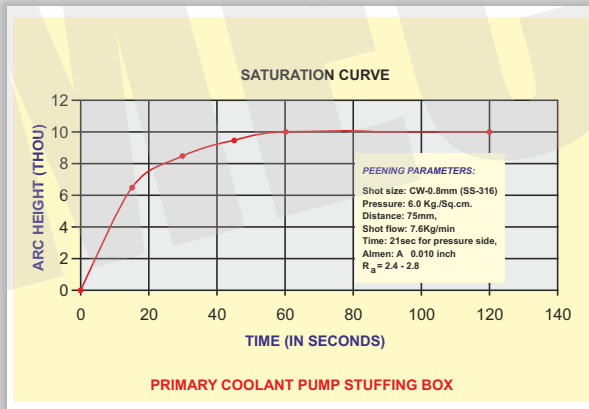
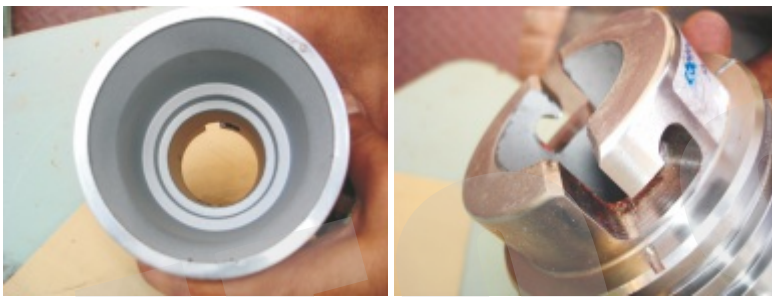
Mec Shot has established a in house Job Shop to cater Global/Indian Industries in the field of Shot Peening of various components also provide solution for shot peening of all types of applications.

Shot Peening job shop shall provide all type of Shot Peening facility along with test equipments to its customers for following components :

Turbine Blades Gears, Torsion Bars & Drill Rods for Offshore Drilling.

We also do job work for critical components i.e. Turbine Blades, Drill Tubes, Big Shafts. The full furnished facility in shot peening is available at MEC SHOT with requisite standards & specification. We have supplied shot peening machines to various clients in above mentioned industries and assisted them to get solution for their shot peening problems.

Mec Shot has recently carried out Job Work of Shot Peening in Re-building of damaged Gas Turbine Rotter at BHEL, Hardwar and saved foreign ex-chequer for the country.



NEW TECHNOLOGY IN PEENING "HYBRID PEENING"

Recently MEC SHOT has designed & under process of manufacturing Hybrid Peening Machine as per the requirements of Aviation and Automobile Industries.

Hybrid Machines are useful for big components of Aviation & Automobile Industries where impellers of Airless Machines & Air Nozzles of pneumatic operated shot peening machines jointly operates. The blast wheel technique has operationally used to clean or peen parts. MEC SHOT has taken advantage of this technique to process majority of the part area using single or multiple blast wheels.

The limitations of the blast wheel technique is to clean/peen external surfaces only. This was the region for internal cleaning/peening a blast nozzle mounted on a manipulator peen applicable areas which are not possible by the blast wheel. Nozzle manipulation, using externally mounted manipulators ensures adequate blast coverage to inaccessible areas.





Electronics Inc.

Shot Peening Control

Mec Shot Authorised Distributor in India & Sri-Lanka

SHOT PEENING TESTING EQUIPMENTS



ALMEN STRIPS

Almen Strips as per AMS-S-13165:
SAE-1070 Cold Rolled Spring Steel
Finish Blue Temple.
Uniformly hardened to 44-50 HRC
Flatness - ± 0.0015 ".

ALMEN STRIP TYPE "A"

ALMEN STRIP TYPE "N"

ALMEN STRIP TYPE "C"



Almen Gage, Holder & Blocks

ALMEN GAGE

Precision crafted in the USA and available with all the features needed to satisfy the most stringent specifications. Every detail has been optimized for the utmost in performance and convenience. Starting with the certified accurate construction, the gage is designed to give many years of trouble-free, reliable service.

Two type of Almen Gage

DIGITAL ALMEN GAGE

ANALOG ALMEN GAGE



ALMEN GAGE HOLDER

Standard Block with Plain Holes

ALMEN GAGE CALIBRATION BLOCKS

Step blocks are used to calibrate the #2 Almen gage indicator. These specially designed blocks are convenient to use since they are placed upon the gage directly without having to remove the indicator.



MAGNA VALVE

The valve construction includes a permanent magnet for normally closed operation & an electromagnet for controlling shot flow rate. By regulating the voltage to the electromagnet, any desired flow rate may be achieved. When power is off, the valve will hold shot due to the permanent magnet. Two Types of Magna Valves :

1. FOR AIR PEENING APPLICATIONS

2. FOR WHEEL BLAST APPLICATIONS

WORKSHOP ON SHOT PEENING & BLAST CLEANING

Mec Shot philosophy is to impart Knowledge in the field of technology development & to fulfill the philosophy Mec Shot has been regularly conducting Training Workshop at different location in India. This time it has been conducted in PUNE. It was a over whelming response from the industries like Sandvik Asia, GTRE, BHEL, HAL, Kriloskar Brothers, Ferromatik Milacron, Godrej, Mahindra & Mahindra etc.



1st Workshop at Jodhpur in 2006



2nd Workshop at Bangalore, 2007



3rd Workshop at Pune, 2008



**MEC SHOT BLASTING
EQUIPMENTS PVT. LTD.**

Corporate Office: E-279, M.I.A., Phase II, Basni
JODHPUR-342 005 (Raj.) INDIA

Phone : 91-291-2740609, 2744068

E-mail : mail@mecshot.com

Website : www.mecshot.in

