

Simultaneous Dual Sided Airfoil Computer Controlled Intelligent Motion Shot Peening



Innovative Peening Systems

This robotic computer controlled seven axis programmable shot peen machine has the unique feature of two Z axis (vertical) arms each with a t axis (nozzle tilt) for simultaneous dual sided airfoil peening. Dual sided peening provides the proper induced compressive stress without concern able distortion. The programmable servo motors with absolute encoder positions the nozzle and part with exact repeatability. The manipulator is programmed to interact with a direct drive part revolution system for exact nozzle standoff distance on each airfoil as the airfoil contour or twist changes from base to tip. This allows for correct intensity peening throughout the airfoil and providing low consistent surface finishes. A teach pendant is used to teach the robotic nozzle manipulator the motion used during the process. The robotic controller has enough memory to store hundreds of individual part motions. The computer is in a PC format for easy memory storage and use. The operator can enter the room and teach the robot to move to an infinite amount of given points. The robot



can be programmed to use joint axis motion. The system will then repeat the coordinates and joint action commands during the process. The motion system is totally integrated with Innovative Peening Systems CIMCAP software. CIMCAP stands for Controlled Intelligent Motion Computer Alarmed Parameters. The software monitors key shot peening parameters such as motion of nozzle, improper air pressure, low shot and media delivery valve failure. The software also provides an onsite machine manual, saturation curve software and a photo verification of part recipe.

The cabinet is build for durability using 1/2" steel plate construction thus providing for quiet operator operation. Peening with intensities of 8-12A usually results in about 75 dba. The Robot can be interacted with other moving servo motors such as automatic part loading. To provide constant shot delivery the system has a continuous direct pressure media delivery systems. The shot recovery system includes a mechanical screen classifier keeping the media sized and clean for more precise and consistent processes and an automatic reverse pulse cartridge dust collection for clean operation.

Our references include: NASA, General Electric, US Technology, United Technologies, Heitco Aerospace, Shaw Aero, US Military, Caterpillar and Dupont.

- Standard Features Include:
- ◆ 1/2" steel plate construction.
 - ◆ Servo motor part indexing.
 - ◆ Direct drive part rotation
 - ◆ Five axis nozzle manipulator.
 - ◆ Continuous direct pressure shot delivery system.
 - ◆ Auto pulse cartridge dust collector.
 - ◆ Main operator touch screen.
 - ◆ Portable programming touch screen.
 - ◆ Mechanical screen classifier.
 - ◆ Rigid urethane shot recovery duct.
 - ◆ Siemens motion integrated with CIMCAP software
- Optional Features:
- ◆ Digital shot flow controls
 - ◆ Customer choice of controllers (CIMCAP may not be available on certain controllers)
 - ◆ Choice of floor layout and operator platform

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