

# Progressive Surface Delivers Turnkey Operation

**WHEN AN AEROSPACE OEM** in Singapore wanted robotic shot peening machines with turnkey operation, they came to their trusted resource: Progressive Surface. The OEM required three identical machines for the shot peening of aircraft fan blades. The part programs needed to run in any of the three machines and the dimensional stability of the parts was crucial. The fan blade airfoils could not twist out of shape after peening. “We believe the customer entrusted us with the project because they have a long history with our robotic machines and we can support them through our multiple locations in Singapore,” said Bill Barker, Sales Engineer with Progressive Surface.

As mentioned, the machines are identical and the specifications and their benefits are as follows:

- Ceiling-mounted Fanuc M20i robot and turntable that is an auxiliary axis to the robot
- Single blast nozzle for root peening and a two-nozzle system for peening airfoils

- Sweco vibratory screening system to screen out broken shot particles and undersized media
- Dual-pressure pot blast system that provides a continuous supply of media
- Closed-loop controlled air pressure and media flow rates
- Saint Gobain Zirshot zirconia media for optimum surface finish control while meeting the low intensity requirements
- PRIMS Pro computer operator interface by Progressive Surface for intuitive part program selection, complete process monitoring and extensive datalogging
- Electronics Inc. 700-24 MagnaValves for non-ferrous media

The 700-24 MagnaValve is a new product and this is its first implementation on a Progressive Surface machine. “The decision to use a different media control method was difficult for us to make,” said Mr. Barker, “but in the end, it was the correct decision. In the past, we used an Electronics Inc. NFS-100 non-ferrous flow sensor with our servo-controlled



*Two of these identical machines have been shipped to an aerospace OEM in Singapore. The third remains at Progressive Surface for a short time for the development of a turnkey process for motion programs, Almen fixtures, and part-holding fixtures.*

orifice for closed-loop media flow control. While this approach worked, it was quite tall and it had too many moving parts. The beauty of the 700-24 valve is that it uses the best attributes of the original ferrous MagnaValves and it uses the same style controller," he added.

James Hoffman, a Progressive Surface Process Engineer, noted, "This device has been very reliable up to this point in all our internal testing. The calibration procedure is very straight forward. After it is calibrated, the valve reaches its setpoint quickly when media flow is initiated and it is able to maintain a very consistent flow through the blasting cycle. To date, we have flowed several different types of non-ferrous media through the device without any issues and have had no problem maintaining our standard calibration tolerances."

Two of the machines have been shipped to the customer while one remains at Progressive Surface for process development. Due to Progressive's experience in peening many different types of fan blades and roots, the customer asked them to develop a turnkey process which included shot peening process parameters, robot motion programs, Almen fixtures, and part-holding fixtures. "Since the machines are identical, we were able to ship two of the machines to the customer site and hold the third machine at our facility for a short time to complete development of the process for a range of parts," said Mr. Barker.

"The project technical manager and the buyer both came to Progressive Surface for the machine runoffs. (A machine run-off is a collaborative effort between the customer and Progressive to test and approve the machine(s) prior to shipment.) They were pleased with the machines and looked forward to getting them into production," concluded Mr. Barker. ●



*Each of the three Progressive Surface shot peening machines has two 700-24 MagnaValves for non-ferrous media.*



### **The 700-24 MagnaValve**

**Flows ceramic media, glass bead, and plastic media in suction and pressure-type air-blast machines**

- Normally closed
- Meets SAE AMS 2430 and 2432 specifications
- 24 Vdc operation
- CE compliant
- Provides a closed-loop system with the EI FC-24 Controller
- Unique design makes it easy to use and maintain
- Reduces media and energy consumption

For more information or to order, call EI's Customer Service staff at (574)256-5001 or 1-800-832-5653 (U.S. and Canada).

Patented Sensor: US Patent 8,388,407 • Patent Pending for Magnetic Engine