

# SHOT PEENING AUTOMATION

**SHOT PEENING** is a process that requires a high level of control to achieve work process repeatability. The main reason for that is one cannot check the peening effect on actual material without destructive testing, so it is crucial to control all parameters that affect intensity in order to ensure that the shot peening process is done according to requirements. Today's machines are equipped with PLC and HMI control; therefore, almost everything can be controlled and stored in case reverse checking is needed. For controlling their shot peening machines, FerroECOBlast uses their own platform called FerroSmartPanel, which can be set up on any HMI or PLC brand. It has been designed in-house based on our extensive know-how and experience in surface treatment gained since 1964.



Sample screen from FerroSmartPanel

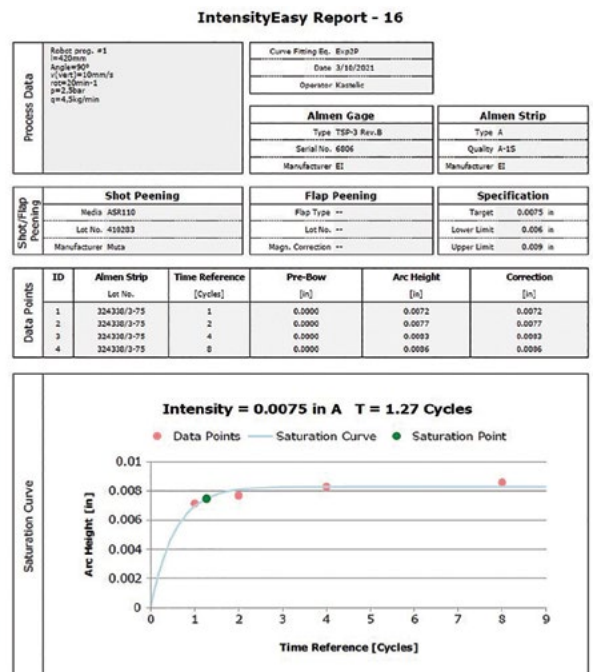
At the heart of such a system lies not only control of machines, like manipulators or robots, and turning on and off of electrical components, but also control over the complete process—together with checking and storing all data on a hard disk so that the history can be downloaded if necessary.

Let's take a look at what needs to be controlled in shot peening: first, the media flow, which needs to have a closed-loop system that alerts you if the flow is out of the tolerance range and brings the process to a halt—and the same applies to operating air pressure. Once this is set up, the second thing that affects intensity and the shot peening process is the distance and angle of the nozzle relative to the workpiece. This is controlled by a robot or gantry manipulator which usually operates within very tight tolerances. Once we have this set up, we need to check if the shots used for shot peening are OK, so the recycling system needs to be engaged

to continuously separate broken particles and maintain the operation mix at the same level all the time.

All right, we have set up the parameters and have established control. Now, is there anything else that needs to be done? Well, to do a proper shot peening job, this is actually enough; however, we have upgraded our system with various features that allow the operator to easily calibrate the media flow valves and to set up the saturation curve on the machine itself without using an additional program. The FerroSmartPanel interface includes a saturation curve solver that allows the operator to connect an Almen gage via USB and import all measurements taken during the Almen testing and to plot a saturation curve. The saturation curve is stored with all the necessary information. This is usually done with separate programs where arc heights need to be entered manually, which is unfortunately very time-consuming.

Every facility that uses a shot peening machine knows that media flow valves need to be calibrated periodically or every time material size is changed. The valves are most commonly sent to their manufacturer for calibration, and it could take days or even weeks to get them back before



Saturation curve report displayed on HMI

putting the machine back into operation. This causes production downtime; something everyone wants to avoid. This nightmare is gone with our system since our machines come complete with a calibration station and program that allow media flow valves to be calibrated by the operators themselves. This eliminates weeks of production delays and helps ensure that your equipment is ready and set for work.

As almost everything these days, this too is under ongoing development and is improving on a daily basis. Our R&D crew are constantly looking for improvements to reduce production time and cost and to increase the quality of the shot peening process. ●



*Integrated shot flow calibration system*



*ARSP 1000 DUAL shot peening machine*

**The 14th International Conference on Shot Peening**  
**September 4-7, 2022**  
**Politecnico Milano**  
**Milan, Italy**

*Early registration begins July 15th, 2022*

**ICSP-14** is the calendar's most important event on Shot Peening. This three-day event is a must for scientists and engineers working in mechanical surface treatments. Discover the state-of-the-art in the science, technology and applications of mechanical surface treatments.

**What will you learn?**

Today's global society faces many urgent challenges. The focus is on saving energy and reducing emissions. Shot peening can create stronger, lighter and smaller metal components. Shot peening's benefits and applications are the key to satisfying sustainable requirements in high-tech fields.

Discover new applications and new markets for shot peening.

Hear the latest developments on how shot peening and related mechanical surface treatments can enhance the resistance of load-bearing components.

Attend presentations on combatting fatigue and fracture, modelling and simulation, and related and alternative surface treatments.

**Who is it for?**

*Academia*

ICSP-14 offers a unique forum for scientists to deepen and update their knowledge on all aspects of mechanical surface treatments, and present the state-of-the-art in the research world.

*Industry*

International representatives from academia and industry will come together to present and discuss the latest developments in shot peening and related subjects.

**The ICSP-14 Scientific Committee**

Our Scientific Committee members come from academic institutions and industrial organizations as part of our commitment to promoting multidisciplinary cooperation and exchange.

**Topics**

- Processes for Fatigue Enhancement
- Experimental Methods for Material Characterization
- Surface Finishing
- Laser-Based Processes
- Industry 4.0

**Registration**

Visit [www.icsp14.org](http://www.icsp14.org) for more information and to register. ●