An Advanced Robotic Shot Peening Cell

Inside the FerroECOBlast ASP 1000 ECO shot peening cell

Introducing the ASP 1000 ECO

The FerroECOBlast "ASP1000 ECO" automatic robotized peening cell was designed and built for a customer in Turkey, who will use it for shot peening of new aircraft parts. The cell satisfies and even exceeds the demanding requirements of various SAE / AMS standards and requirements in aviation industries, which is facilitated by advanced, computer-based systems.

In shot peening, it is important that the cell provide a repeatable process, i.e., peening the same places from the same distance, with the same speed of nozzle movement, the same pressure, and the same flow of the abrasive. A very important additional factor in the whole system is purification, the elimination of inadequate peening material. It is important that there is no waste in the medium, and that the peening beads are not damaged or broken, which is enabled by the use of various components in the recycling tower, such as different vibration screens, magnetic separators, and spiral separators.

Using a spiral separator, they have ensured the separation of damaged or broken beads from the steel beads with correct shapes.

By integrating the automatic dosing system, they ensure the addition of fresh medium to the system in the event of a detected lack of medium. This enables the customer to eliminate downtime due to the need to refill the system. In order to facilitate easier and faster emptying in the event of a change of medium, they have integrated an automatic emptying of the entire system.

This is just a part of the system that makes up the automated robotized shot peening cell that enables the quality machining of this Turkey airline's components.

In the development phase of the automated robotized shot-peening cell, the correct development and implementation of the sequence of technological processes with which they perform the peening process on the workpiece are extremely important.

It is necessary to know the material of the workpiece, its behavior in the process of shot peening, and how this process affects the mechanical properties of the workpiece. Therefore, it is important to know beforehand the technology of aeronautical production and the mechanical and chemical properties of materials on which they will perform the shot peening process.

Without knowledge of prior behavior, the process of shot peening can be performed improperly, and it may also represent a certain risk for the product due to a wrong execution of the shot peening procedure, thus achieving a completely opposite effect. Therefore, the sequence of operations on the workpiece is extremely important.

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In addition, the entire system is designed to protect operators during the work process. The equipment includes safety-warning systems, the so-called security chain, which provides operator safety during the operation, and the safe operation of the entire cell.

Unique features of the ASP 1000 ECO

The "ASP 1000 ECO" automatic robotic shot peening cell is special because it is universal and suitable for high quality machining of various aircraft components.

The rotating table is important, too. The rotation of the table is synchronized with the movement of the robot.

Built-in motor driven hoist can be used to load workpiece on the rotating table.

The entire cell is operated by user-friendly SCADA system and it has simplified machine management, thus achieving greater operator and supervisor satisfaction.

The cell is built for peening with two type of metallic abrasives, which are rapidly and automatically changed, without operator intervention.

Efficient regulation of medium flow is achieved with MagnaValves.

Finally, they have a full process history recorded for each single workpiece.

Other industries served and goal

Shot peening cells are used in the automotive industry, gearboxes and suspension, and in the field of internal combustion engine components. They can boast of their own shot peening cell, with which offer services of shot peening on various products for customers from both the automobile and aviation industries.

Their goal and long-term vision is to conquer other similar areas where such technology is necessary and important. In the first phase, they want to proceed in the direction of surface peening – laser peening, and shot peening in combination with water, so-called wet peening. Here they also cooperate very closely with their partners, the best world-renowned companies.

The Authors:
Mr. Darko Hočevar, Technical Manager
FAA Certificated Shot Peening expert
E-mail: darko.hocevar@ferrocrtalic.com

Mr. Aljaž Molek, Technical Sales Representative
FAA Certificated Shot Peening expert
E-mail: aljaz.molek@ferrocrtalic.com

For Information:
FerroČrtalič d.o.o.
Sela pri Dolenjskih Toplicah 47
8350 Dolenjske Toplice, Slovenia
Tel. +386.7.38 45 100
Fax +386.7.38 45 115
www.ferroECOblast.com

Size classification of peening media

Controllable pneumatic system