

FerroECOBlast:

Leaders of the Evolution of Aerospace Surface Treatment

Complete Turnkey Solutions for Engine Blades and Vanes

FerroECOBlast has been heavily investing in research and development in the aviation sector over the last few years and has established itself as one of the leading companies in the surface treatment machinery industry.

“We don’t produce only machines for our customers—we provide them with complete solutions and real knowledge. Our main goal is customer satisfaction, which we attain once they begin using our high-quality products. We strive to have flawless products as there is no room for mistakes, especially when it comes to the aviation industry where there is a lot at stake,” said Mr. Aljaž Molek, FerroECOBlast’s in-house shot peening expert.

FerroECOBlast delivers complete turnkey solutions to MRO workshops where jet engine blades and other aircraft components come for repair. They provide complete surface treatment solutions including machine design and production, installation, operator and maintenance personnel training, and technical consulting.

“We provide tailor-made solutions and always deliver them together in conjunction with installation, training and consulting. Our employees are highly educated and most of us have been certified by the FAA for shot peening. We want to understand the process to really help our customers, not just sell equipment. One of our latest installations was for a MRO workshop dealing with engine parts—engine blades and vanes, to be precise. When the coating is removed, vanes are inspected for cracks and repaired. After inspection, shot peening is performed to reduce residual stresses and prevent the occurrence of corrosion. After shot peening, grit blasting with fine aluminium oxide (30 microns) is performed with a separate machine and the part is ready for new metal or ceramic coating. If both coatings are to be applied on a vane, grit blasting needs to be performed between coatings as well,” Mr. Molek said.

Automatic Shot Peening Machine – ASP Series

The ASP Series is designed for high productivity and meets all requirements according to AMS2430 and AMS2432 specifications. The operator loads the part on the satellite turntable and presses a safety switch that initiates the rotation of the turntable which enters the working area, passing through a par-detection station. The machine is also ready for robotic loading that will be an option in the near future. Shot peening is performed with steel shots according to customer requirements and the shots are recycled in a “recycling



ASP Series shot peening machine for blades and vanes.

tower.” All media is transported through a dust extraction unit to remove dust. Subsequently, the recycled media goes through a series of classification units that make sure only good and still usable media is fed back in the system. The recycling tower is designed in such way that media is always being recycled according to AMS2431 specifications. All our machines feature our own user-friendly interface system called the “FerroSmartPanel.” The FerroSmartPanel controls all parameters and stores reports for each part, providing complete traceability and repeatability of the process to the customer. A large touch screen panel gives the operator good visual feedback of the process and parameter setup. The ASP Series features:

- User-friendly “FerroSmartPanel”
- Parameter setup
- Data report and visual monitoring
- Safety features
- Full media recycling system (AMS2431)
- MagnaValve media flow control
- Closed-loop airflow control
- Repeatability of the process
- Traceability of the process

Precise Pre-Coat Grit Blasting Robotic Machine – RoboBlast Series

Surface preparation ahead of coating is of utmost importance to ensure a high-quality final product. For this specific

purpose, we designed a robotic grit blasting machine. Since this type of surface treatment requires working at low pressure and with very fine aluminium oxide (~30 microns), designing and manufacturing a custom media delivery and recovery system has been a real challenge. The working process is essentially very similar to shot peening—either an operator or a robot loads the part on the satellite turntable to start. Since this machine allows both pressure and injection blasting, a robot selects the correct system according to a present program formulated by a technician on the FerroSmartPanel. The process is performed in several steps with different pressure and media flow parameters, which ensures the workpiece meets the specific requirements and is ready for coating. The flexibility of the robot and synchronized working satellite allows the operator to implement this application on parts of differing geometries. Recycling of media is similar to shot peening and it also uses a continuous system. Years of experience and knowledge paid off as we were able to successfully design a special system for fine media. To comply with low-pressure working requirements of around 0.1 bar (~1.45 PSI), we engineered a completely new pneumatic system that delivered perfect results. Due to closed-loop airflow regulation, we managed to stay within tolerances despite

the low working pressure. Our continued efforts in research and development paid off, and we managed to combine all these innovation into a truly state-of-the-art machine. The RoboBlast Series features:

- Robotic manipulator
- Synchronized satellite movement
- User-friendly FerroSmartPanel
- Pressure blasting system
- Injection / suction blasting system
- Low pressure blasting – 0.1 bar / 1.45 PSI
- Specially designed media recycling system
- Fine media blasting – 30 microns

All FerroECOBlast shot peening machines are compliant with AMS2430, AMS2432, AMS-S-13165, and Nadcap.

In the last few years, FerroECOBlast has made a big step forward in its technological, marketing and R&D departments. We also started hosting a yearly “Share & Succeed Business Conference” for partners from all over the world where we teach and share new technologies, projects and business opportunities to succeed in different markets and industries. “We are a family company, so we treat our business partners and customers like family members. We believe that trust and respect are of utmost importance for a successful long-term partnership,” said Ms. Mojca Andolšek, FerroECOBlast’s CEO.

A New Asset for FerroECOBlast

FerroECOBlast has acquired a Bombardier CRJ 200 ER passenger jet. Their engineers are testing some of the components in their laboratory. They will use the parts to develop new technologies and applications which could help improve parts’ safety and extend the durability of aerospace materials. The aircraft was transported to the FerroECOBlast headquarters in what was one of the most challenging and extraordinary transports in the history of Slovenia. The jet has already become an attraction and will be used as a very unique meeting room. Ms. Andolšek said, “Too bad we didn’t have the space for a bigger plane as we could have hosted our FerroECOBlast Academy aboard it. But having a meeting on a passenger jet is quite impressive on its own!” ●



RoboBlast Series blasting machine for surface preparation before coating.



The FerroECOBlast team and partners pose in front of the CRJ 200 jet FerroECOBlast acquired for research purposes.