The best range of universal grinders for aerospace

by Claudio Tacchella

The aerospace & defence sector has always been one of the main vectors of technological and entrepreneurial innovation, capable of developing products, production processes and digital solutions, as well as revolutionising, in a short time, aerospace and defence strategies with a significant impact also in the civil aviation sector. Industry 4.0, 3D printing, increasingly innovative and intelligent materials and production processes, automation and robots and digitalisation are just some of the themes that will bring disruptive changes with enormous and competitive challenges.

Made in Italy represents, in this context, a recognised global excellence, which is characterised by the reliability, quality and flexibility of products, research & development and work organisation. The production chain of aerospace companies is rich in industrial and technological capabilities and places Italy at the forefront in the international context, fourth in the EU and seventh in the world.

Among these, the company AZ spa based in Thiene (VI), stands out. It is a manufacturer of large-sized special cylindrical grinding machines that has been able to gain success as a leader, thanks to the high quality and performance levels of its products and the ability to propose itself as a problem solver for technical topics, including complex forms, with innovative, highly flexible and customised grinding solutions.

AZ RU universal grinding machines are high performance machines designed to work in the micron range

The company has over 40 years of experience in the sector and has always had a strong international vocation with an export share of over 95 percent and more than 3,000 grinding machines delivered and operating in more than 80 countries.

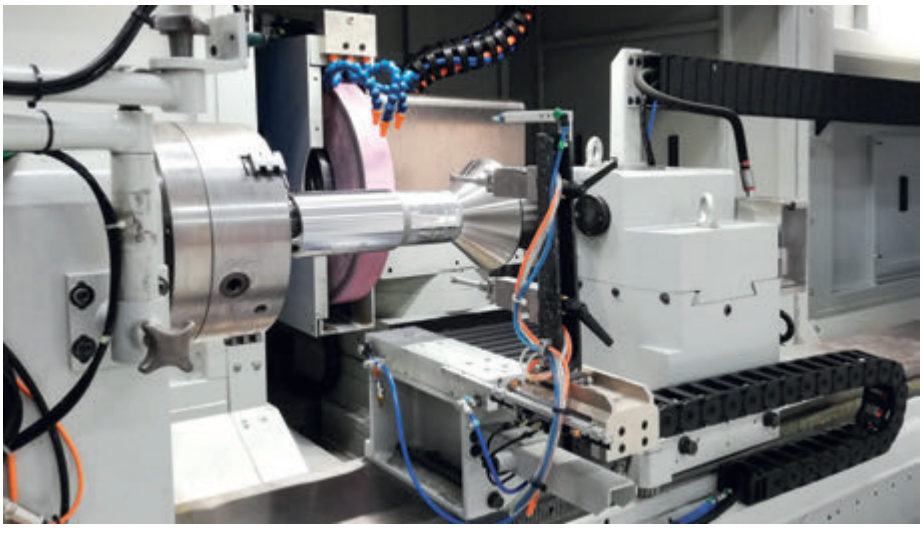
AZ spa has an impressive modular range of grinding solutions dedicated to numerous strategic sectors. In particular for the international aviation industry, direct, indirect EOM and MRO designs and builds grinding systems presented in a wide product portfolio called "AZ-Aerospace" for the manufacture and maintenance of components of aircraft engines, turbo spindles and landing gears.

In the AZ-Aerospace line, the new RU range, RUA, RUX and RUG models, for high precision CNC universal grinding machines for external and internal diameters, which has recently been renewed, stands out. The RU line is modularly designed and is developed in numerous models which differ in size with distance between centres 400, 600, 1,000 and 1,600 mm, technical characteristics, configurations, accessories and process control devices and customisations.

AZ RU universal grinding machines are high performance machines designed for customers who have to work with dimensional, shape and position tolerances in the micron range.

The dynamics of the machine is developed on a rigid "T" shaped base with the main axes Z longitudinal and X transversal arranged orthogonal. The wheelhead moves along the X-axis, the table, where the workheads are mounted, moves along the Z-axis.

The axes move on linear guides by high precision ball screw or linear motors. The workpiece is clamped by headstock and tailstock both easily positioned along the table. Constructive features are projected to



The wheelhead can perform machining for external, internal, shoulder, face, conical, complex profiles and threads grinding

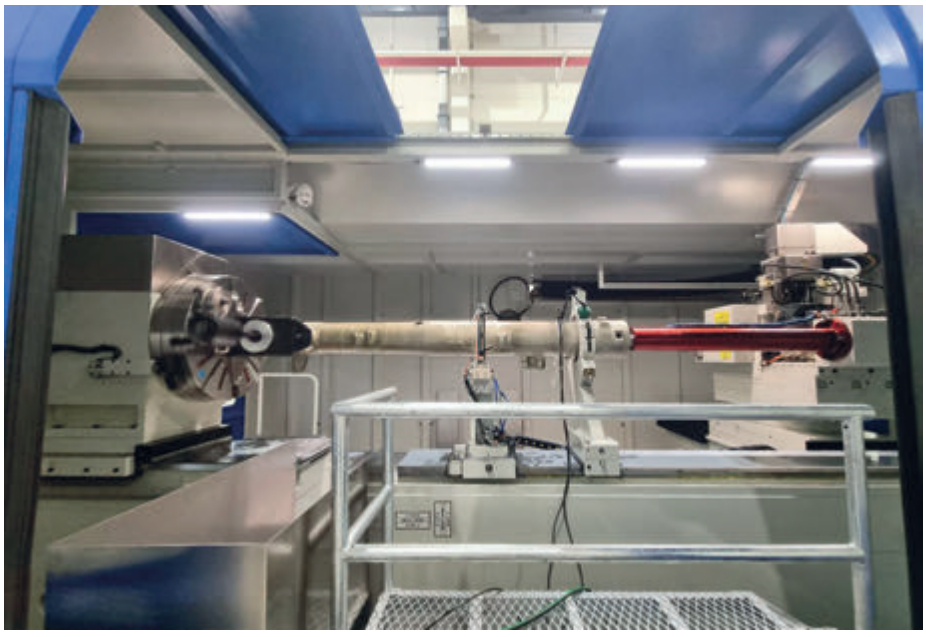
ensure maximum machine stability during all the process phases. The table, the wheelhead and the headstock can swivel CNC or manually controlled.

The operational flexibility of RU grinding machines is very high. Thanks to a wide combination of wheelhead, OD grinding wheel diameter 508 mm with spindle power from 8 to 15 kW, the machine can be configured with a fixed wheelhead or manually rotating in B axis of +/- 20°, or automatic B axis B at +/- 30° or +/- 360° while the grinding wheel spindle can tilt in axis A for thread grinding.

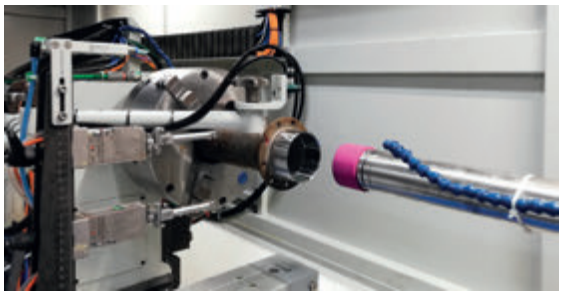
The wheelhead can be equipped with multiple spindles to perform different types of machining. It can be integrated in a single clamping for external, internal, shoulder, face, taper grinding, complex profiles and threads for external and internal machining with straight, angular and with B axis which is driven by an integrated torque motor.

Silicon carbide, corundum, CBN and diamond grinding wheels can be used to grind all aerospace materials, metals and their alloys including chromium and in particular those subjected to the most innovative systems for thermal spray techniques, such us H.V.O.F.(High Velocity Oxygen Fuel). The grinding process is constantly monitored thanks to high-level and last-generation measurement and controls systems.

"The modularity of the RU project," says Sarah Pizzolato marketing director of AZ spa, "also allows us to guarantee maximum flexibility of use, which is a very required condition by aerospace companies given the high added value of the pieces to be processed with waste equal to zero defects. In addition to performing multiple grinding operations in a single piece setup, our grinding machines allow them to be easily reconfigured and retooled in order to saturate and make the most of their productivity. The customer can combine several different batches with each other and with different volumes, up to the single piece to be processed. The AZ-Aerospace range use the most advanced mechatronic solutions, that are all customisable, energy efficient, safe, reliable and comply with Industry 4.0 requirements."



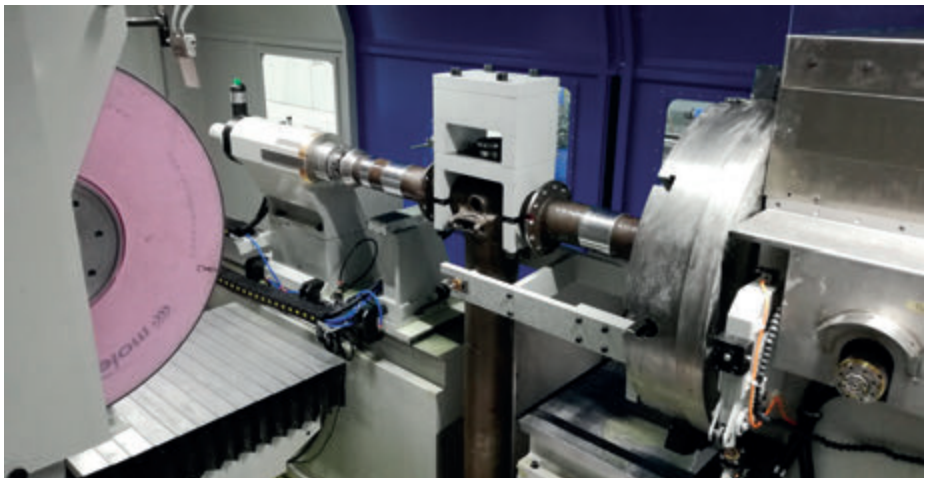
The machine can perform internal grinding of very deep holes



The grinding process on AZ-Aerospace range is constantly monitored thanks to high-level and last-generation measurement and controls systems

For the technical assistance service, in addition to the remote assistance and monitoring services available on the grinding machines, AZ spa has developed an innovative technology called AZ-SmartService which, thanks to Augmented Reality (AR) technology, helps customers all over the world to connect with AZ technical support. With the special AZ-SmartGlasses device, highly skilled AZ tech support can see through the eyes of the operator and give precise instructions on the correct operation to be performed and in real time. This technology reduces human errors, the risk of wrong spare part identification and the time of spare part delivery, costs and time in technical assistance.

With the AZ-Aerospace line, the aeronautical industries can benefit from the technological progress brought about by the grinding machines and grinding solutions made by AZ.



The RU line can be configured to perform the complete machining of landing gear

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