

PRODUCT PRESS RELEASE

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Integrated measurement solution for tool, die and component manufacturer.

Fritz Stepper GMBH & CO.KG is one of the technology leaders in the stamping sector and known worldwide for its introduction of modular stamping tool construction, it produces several billion contact parts per year. In the area of Quality assurance, the company has relied on Alicona, the provider of 3D optical measuring technology, for many years. Now Stepper is expanding its automation in the production environment to include Alicona measuring systems. These Measuring instruments operate automatically and are in use 24 hours a day 7 days a week.

When a stamping tool is used to make seven plug connections simultaneously it produces 16,100 contact parts every minute. The head of Laser Ablation and High-Speed Cutting at Stepper, Marcel Heisler comments the one thing that applies, above all, to this throughput is "We have to measure, measure, measure!" Its customers, who come mainly from the automotive industry, have high demands for precision, accuracy and productivity. This is true for all high volume production for industry. To achieve this level of productivity, accuracy and surface finish the stamping tool has to be of a very high quality in terms of material, surface quality and geometric shape. It is only when the tool is 100% correct can this be achieved.

In order to ensure the quality of its pressing and bending dies, Stepper has been relying for many years on Alicona, one of the leading manufacturers of high-resolution optical 3D measuring systems for form and roughness measurement of micro-precision dies and parts.

3D measurement technology for final inspection and development of high-performance punching tools

In Fritz Stepper GmbH Alicona is used for both continuous quality assurance of the manufactured parts in addition to the continuous development of the stamping tools with regard to material, surface quality and accuracy. As this is only possible with absolutely reliable measurement results the Pforzheim-based toolmaker has been using Alicona optical 3D surface measurement technology since 2010. Marcel Heisler stated that before Alicona measurement was introduced, we had massive difficulties measuring our tools with steep flanks, smooth surfaces and different reflection properties. The knowledge we've gained from Alicona from the beginning has brought us incredible progress and is the reason that we have invested in the Automation of our Alicona 5 Axis measurement system".

Another reason is that Alicona provides a wide range of measurement applications in only a single measuring system. This allows both dimensional tolerances and surface quality measurement on different component types, shapes and sizes, plus it can measure the difference between the tool and component.

His conclusion: "We do not know of any other system on the market that offers such a wide range of applications. We can measure just about anything!"

Automation from design to measurement technology

Precision and innovation are demands that both Stepper and Alicona have in common. Both companies are regarded as pioneers and drivers of their industry. This is being proved once again with the implementation of the latest Alicona technology into the Stepper production process that allows unattended automation of the measurement process.

Digitisation, networking and communication of all production systems are becoming increasingly important in high volume production. Part of the modern production strategy is also to place measurement technology as an integral part of production. This is different to having an inspection process at the end of a manufacturing cycle, as, by placing this in production it ensures that the finished product is right every time. This can be readily achieved with the Optical Metrology systems offered by Alicona.

A further requirement with these integrated automatic measuring systems is that they can be operated by multiple users without any previous knowledge of measuring technology, this allows Stepper to have flexibility across manufacturing shifts ensuring measurements are not affected by user influence. Alicona offers this automation with the "Automation Manager" interface. This software interface enables the user-defined configuration of a measurement series for form and roughness measurement to be set by an administrator on a reference component, this series is started by an operator, in production, at the push of a button. Control and evaluation are fully automatic, taught-in parameters are measured and measurement reports directly created with "go-no-go" results.

Stepper is currently introducing the "Automation Manager" in its production. Components of new batches/products only have to be taught-in once on a reference part, each additional component is automatically checked without the need to retrain, "explains Heisler. This will increase our efficiency many times over." In terms of increasing efficiency through automation, Stepper has further plans with Alicona. The optional connection of the automation interface, to an existing CAD-CAM program, allows the integration of measurement technology in the design phase by defining a measurement series in the CAD data set of a component.

A simulation provides a preview of the measurement process to be carried out and providing reliable measurement planning and ensuring that the design allows measurement to be made.

The virtual operation of the Alicona measuring system covers the entire handling process, from the positioning of a component to the determination of the measuring range in 3D. For Stepper, the advantage is obvious: "We expect a massive time saving. With the CAD-CAM connection, I no longer need the measuring system to teach-in my measurement series, this can be transferred to another workstation. This means that we will be able to use the measuring device 24 hours a day, 7 days a week without interruption in production and fully utilize it".

With the implementation of measurement technology in production and design, Stepper is implementing its strategy of integrating the best technologies into its production with suitable partners. Marcel Heisler confirms: "As a high-tech company, we are looking for partners who share our passion for precision. We found this in Alicona!"