

Modern Motion Control Solutions in Practice



The Challenge

Any production of precise components requires even more precise tools. These tools themselves require a continuous and highly precise inspection.

Automated inspection machines for measuring and presetting tools must be able to handle highly accurate position tasks of less than one micrometer.

The Solution

The highly precise position information of inspection machines is generated by different position feedback devices. The motorized movement of the measuring heads is processed and controlled by a modern motion control unit which evaluates all the position feedback signals simultaneously. It is also possible to release the mechanical output shaft of the motors and move the measuring heads manually to a position close to the inspected device. The final micrometer positioning is then done automatically again. This principle gives the machine's user full flexibility in determining how to handle and move the measuring heads.

Each axis has an encoder directly mounted on the motor shaft plus a glass scale linked to the linear guide units or rotary axis that actually moves the measuring heads. The glass scales give the actual position information of the measuring head regardless of whether it is moved automatically or by hand. The glass scales generate "SinCos" signals with 20 micrometer period length and a resolution of 256 increments within these 20 micrometers. This is the base for the extremely high resolution and quality of the inspection machine. A motion control unit directly processes the feedback signals of the encoders and the glass scales each millisecond. This simultaneously ensures a very smooth motor control and movement, an automatic slip compensation, and a highly accurate target positioning, even if manual intervention by the user takes place. Additional high speed latching inputs enable capturing of real-time position information at the trigger signals of an image processing device.

Simultaneous processing of different position feedback devices, such as incremental encoders, SinCos glass scales, SSI encoders, and analog potentiometers is just one of the many competitive motion control features handled by zub's products and software algorithms.

The Conclusion

Even complex process tasks seem to be simple in the end if the right product is combined with a highly efficient engineering service that understands the application's demands.

Application videos and further product information:

- Video links showing inspection machines based on zub's motion control units:
[Presetting and Measuring](#) / [Compact inspection machine](#)
- Links offering further information on zub's products:
[Press note: Compact motion control unit](#) / [Data sheet: MACS4-DC3](#)

Your Partner

zub machine control AG provides highly sophisticated motion control modules and software for drive positioning and synchronization.

The MACS motion control modules are the intelligent link in between the PLC or PC and the drive unit. Standardized hardware and software interfaces combined with free programmability offer maximum compatibility without any limitation for the integration of application-specific features and add-ons.

zub AG offers supplementary consulting and engineering services to assist their customers in a very focused and most efficient way.

Take the opportunity to reduce your time to market, your development costs, and your risks. Count on a partner like zub AG, who provides products and engineering services focused on highly-sophisticated but still cost-optimized motion control solutions.

We are happy to accept your challenge. Please [contact](#) us for an initial discussion.

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