

PRESS MATERIAL FOR ADVANCED ENGINEERING

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How do you Automate Metrology to ensure the First Part is a Good Part

Modern production methods enable us to produce very complex parts quickly and automatically.

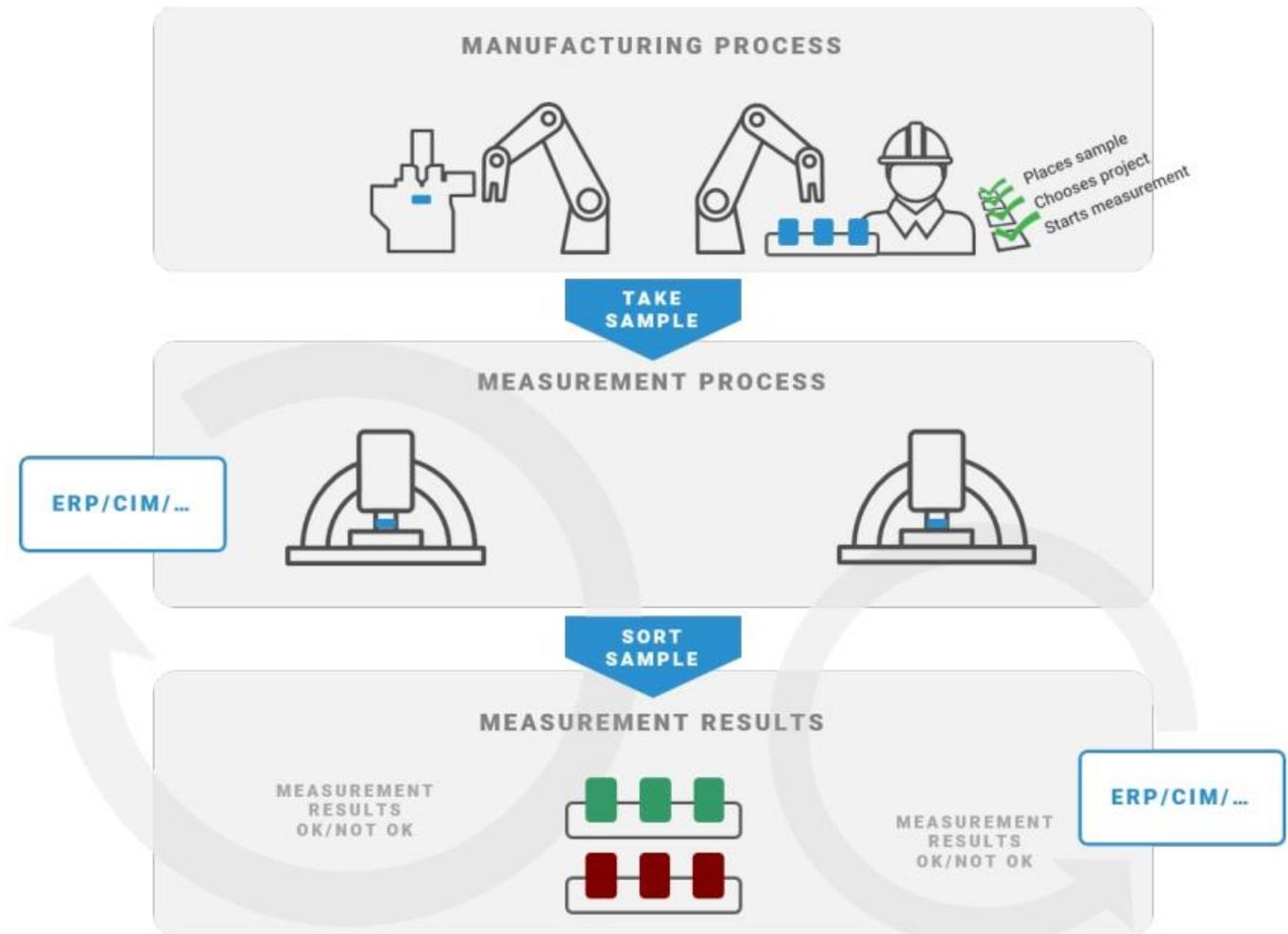
The complexity of these parts then makes critical inspection challenging, and, if performed manually, open to variation due to human influence.

The solution offered by Bruker Alicona is based on the well proven optical metrology process of Focus with a collaborative robot to fully automate and integrate the measurement process into production. A video is available <https://www.youtube.com/watch?v=PY45VXyhIUk&t=8s>.

Automated Placing and Measurement

Alicona Pick & Place is an automation solution that makes it possible to set up a complete automation process within ten minutes. Therefore, an optical measurement system is extended with a robot arm to automatically pick, place, measure and sort components. Pick & Place can also be used in smaller production environments and pays for itself within ten months.

The system is based on the interaction between an administrator who pre-defines automation processes, the collaborative robot for the manipulation and placing of components as well as high-resolution optical 3D measurement technology. The possible connection to existing production systems including ERP facilitates adaptive production planning.



Interfacing with Machine, Adaptive Closed Loop Production

The machined component is removed from the machine by the robot, clamped on the measuring system and measured automatically. Depending on the manufacturing strategy, there are different options of continuing the production process afterwards. Either the measurement result is fed back into the tool machine following a closed-loop strategy, where machine parameters are corrected automatically, and manufacturing continues in a self-controlling manner. Alternatively, an automatic sorting into OK/NOT OK pallets follows after the 3D measurement for further processing.

Interfacing with Worker-Easy Teach-In in only 3 steps

The user teaches-in an automated procedure in only three steps with no programming knowledge required. The robot handles component manipulation including the positioning on the measuring system and further sorting in OK/NO OK pallets. Regardless of the number of components, only four parts per pallet have to be pre-defined. At the push of a button the operator starts the entire process in production. After the measurement is finished, the component is sorted by measurement results OK/NOK and put in the respective pallet by the robot.

Use with Machine Tools

Pick and Place is also used in conjunction with Machine Tools. The machined component is removed from the machine by the Robot, clamped automatically on the measurement solution and measured automatically. Depending on the manufacturing strategy, there are different options of continuing the production process after a measurement. Either the measurement result is fed back into the machine tool following a closed loop strategy where machine parameters are corrected automatically, and manufacturing continues in a self-controlling method. Alternatively, automatic sorting into OK/NOT OK pallets is achieved.

Closed-Loop: First Part, good part

Closed loop, in this case, refers to a closed circuit enabling the first part to be a good part. Production systems, machines and measurement technology form a closed loop. This means that 3D measurement is performed as an integral part of production rather than offline in a measurement room by different operators. This enables the verification of dimensions, tolerances and surface quality of a component at an early stage and details are fed back into production for correction.

How to find out more?

Although the measurement system and cobot are standard products specialization is necessary for component type. To find out more contact Bruker Alicona via sales.alicon@bruker.com.

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