**Safety in manufacturing processes and quality in automation – Tebis offers integrated quality control with "measurement in the manufacturing process"**

Scope:

Approx. 4,300 characters

4 images

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**Safety in manufacturing processes and quality in automation – Tebis offers integrated quality control with "measurement in the manufacturing process"**

**Tebis – a specialist in CAD/CAM and MES process solutions in production machining and die and mold manufacturing – is partnering with Renishaw to combine CAM and CAQ technologies for integrated quality control. Thanks to "measurement in the manufacturing process,” machines can now be used more efficiently and manual intervention can be largely prevented.**

Modern, highly automated machining centers are the backbone of productivity in production machining and mold and die manufacturing. However, the large investments that these machines entail result in high hourly rates and require that they be used with maximum efficiency. This can even mean working night and weekend shifts, for which few personnel are available, as shown in the following examples:

Using the handwheel to acquire the reference point on these machining centers takes too long. In addition, errors that require the remanufacturing of a workpiece can’t be tolerated: for example, the wrong blank, an incorrect setup, or the wrong reference point. Machining operations that are overlooked or areas with a machining allowance – for example, because the tool was pressed away – also mean a significant amount of extra work. In this case, the part must be reclamped for remachining and the reference point must be reacquired. Surveys show that over 70 percent of companies have experienced these errors.

Tebis is now working with Renishaw, a global leading company specialized in precision instrumentation to provide an innovative solution with which users can quickly and easily generate NC programs for measurement tasks. It can run before, during or after machining. The intelligent Tebis Job Manager can now generate complete programs for milling, drilling and turning with integrated measurement routines at the required points.

Because Tebis uses digital twins of machines, tools, clamping and measurement devices, all movements are completely collision-checked. This enables manufacturing companies to verify their processes – with no additional manual intervention in the machine. The technology from Renishaw can also be used to support controls that don't have their own measuring cycles.

Measurement in the manufacturing process increases the degree of automation. The results are greater safety in the process, improved efficiency and higher accuracy in manufacturing. Overall machining time is also reduced. The following useful functions are available for the user to implement:

**Checking for the right blank**

The size and orientation of the blank are automatically checked before the machining starts. The machining operation can be interrupted if the blank is outside the desired tolerance. This establishes the requisite safety for unattended machine operation.

**Determining correct part orientation**

The orientation of the part can be automatically corrected using reference points and part rotation at the beginning of machining. This expedites setup and ensures the best possible manufacturing quality.

**Ensuring tested quality**

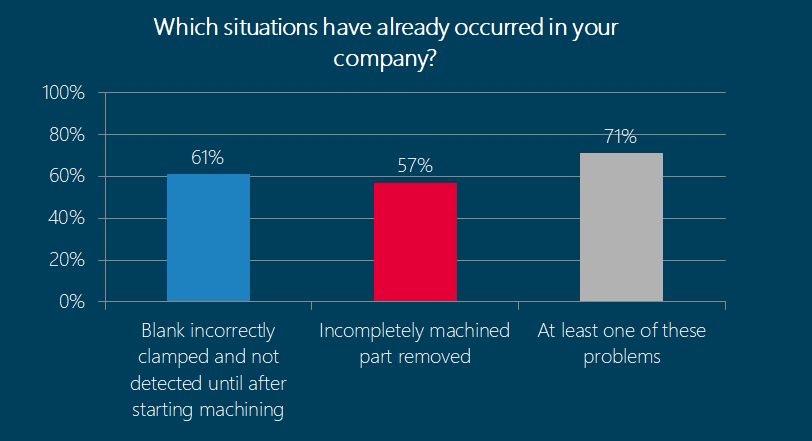
The dimensional accuracy of the part is automatically checked during machining. This allows any necessary reworking to be done before the part is unclamped. It also reduces effort while simultaneously increasing quality and enabling quality documentation.

**Quickly generate documentation**

At the end of manufacturing, a measurement record can be prepared that presents the measurement results referenced to the part right in the 3D CAD/CAM data. This documents the manufacturing quality both graphically and in tabular form.

**Images**

Image 1



((Picture 1: 1\_TebisAG\_Survey.eps/wmf))

Surveys show that errors that can be prevented by integrating measurement in the production process occur in most companies. (source: participants in the Tebis webinar "Measurement in the manufacturing process" in December 2020)  
(Image: Tebis AG)

Image 2



((Picture 2: 2\_TebisAG\_Check-Blank.jpg))

If the blank is automatically checked for correct size and alignment before machining, common sources of errors in manufacturing can be avoided.  
(Image: Renishaw GmbH)

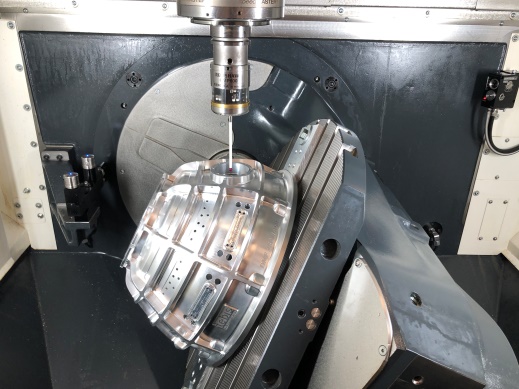
Image 3



((Picture 3: 3\_TebisAG\_Digital-Twin.tif))

All measurement processes are calculated using digital twins to rule out collisions.  
(Image: Tebis AG)

Image 4



((Picture 4: 4\_TebisAG\_Dimensional-Accuracy.jpg))

If the dimensional accuracy of the part is automatically checked during manufacturing, complete machining is verified before the workpiece is unclamped.

(Image: Renishaw GmbH)

**About Tebis software**

Companies in manufacturing-intensive areas use Tebis to organize and optimize their CAD/CAM process chains. They use Tebis systems throughout, from design and engineering to equipment and part manufacturing. The unique strengths of Tebis software allow manufacturers to deliver their products at the highest quality in the shortest possible time to the automotive, aerospace, machinery and equipment industries and appliance and medical equipment manufacturers.

**About the Tebis group**

Tebis is a global market and technology leader in the CAD/CAM and MES sector. With Tebis, customers design, plan and manufacture models, molds and components efficiently, safely and at the highest quality. Our teams of consulting and implementation specialists with practical experience develop strategies for efficient and safe CAD/CAM and MES processes, implement them in the customer infrastructure and ensure a viable technological and competitive advantage.

Tebis software has an intuitive user interface that guarantees a high level of quality and safety in manufacturing, even in highly complex parts. Thanks to Tebis service offerings, customers can easily introduce new technologies and fully leverage the power of Tebis process solutions.

The company is headquartered in Martinsried/Planegg, Germany, and has nine subsidiary offices around the world and distributors in eight additional countries. 350 employees worldwide support Tebis customers, most of whom are in the automotive, aerospace and machine manufacturing sectors.

Automation has been a key factor in the Tebis formula for success for over 30 years. Tebis views itself as an innovator for customers on their path toward Industry 4.0.

[**www.tebis.com**](http://www.tebis.com)

**About Renishaw**

Renishaw is one of the world's leading companies with almost 50 years’ experience in industrial metrology and scientific technologies, and more recently a technology leader in metal additive manufacturing (3D printing). The Renishaw Group currently has 79 offices in 37 countries, with over 4,400 employees.

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