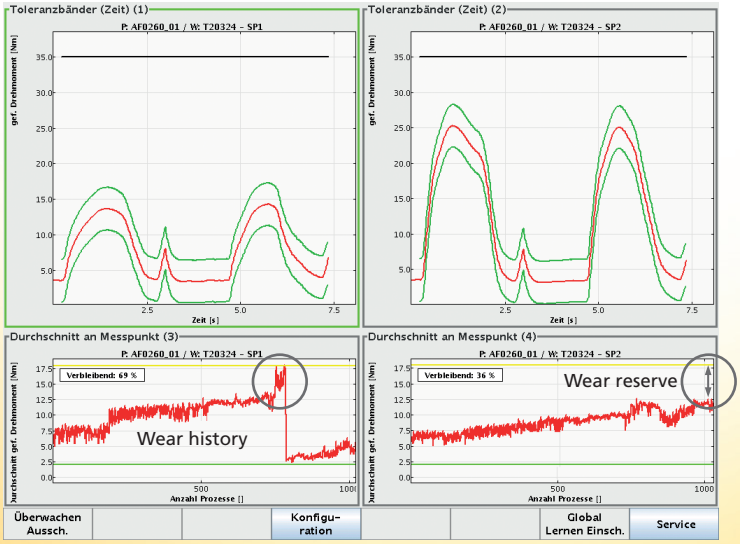
Spindle 1
Current torque

Spindle 2
Current torque



Spindle 1
Tool change after wear

Spindle 2
Sufficient wear reserve

KOMET® BRINKHAUS ToolScope – Wear monitoring

Various different key process values can be monitored with the KOMET® BRINKHAUS ToolScope system. These also include tool wear values in series processes. The application example shown here demonstrates tool wear being monitored on a double-spindle machine tool.

The articles being machined were cast steel components that were cut using a variety of different carbide tools.

The KOMET® BRINKHAUS ToolScope system offers a variety of different methods for determining tool wear. Examples include:

- Average torque of a complete cut
- Average torque at a particular position or time interval
- Average vibration level during the process when an external sensor is connected

Wear monitoring works!

In the upper area of the illustration, the current torque for spindle 1 and 2 is shown.

The lower display window shows the progression of tool wear (average torque of the last 1000 times this tool was used) also in reference to spindle 1 and 2.

In the lower picture on the left, it can clearly be seen how wear on the tool leads to the generation of a wear alarm. This occurs when the red wear curve exceeds the yellow wear limit. After the alarm, the tool is changed and the wear value falls to its initial level. The tool in spindle 2, however, was not replaced, because it still has a sufficient amount of wear reserve (distance of the red wear curve from the yellow wear curve). As a result, the tools can be replaced individually according to their level of wear. Preventative tool changes are no longer necessary.

If a tool breaks unexpectedly before reaching the wear limit, this is also detected, because the lower green „Missing“ limit of the tool is then not reached

The KOMET® BRINKHAUS ToolScope system also provides an easy way of defining further warning and alarm limits that can be individually set by the customer. This enables customer-specific adjustment to particular quality criteria or even the service life of the tools. A piece counter running at the same time can also be activated in the monitoring process.

The system is self-learning and independently learns the progression of tool use based on the combination of the name of the program and the tool. At the end of the learning phase, the ToolScope system uses a statistical basis to suggest tool monitoring limits and wear limits. For the limit of wear, however, the limits must usually be uniquely adapted to particular customer requirements.

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