ZOLLER
expect great measures

Practical Analysis of Tool Wear
Using Artificial Intelligence

wearCheck

Tool Wear Measurement With AI-based analysis

ZOLLER offers the reliable AI function for evaluating tool life. The goal is to use tools efficiently up to the technically feasible wear limit – supported by system-based evaluation of real tool data. On this basis, clear decisions on further use can be made. Unplanned machine downtime due to tool failure can thus be avoided.

Production-integrated wear analysis – ZOLLER shows how progress works with AI!

The AI measuring function »wearCheck« for wear analysis supports the standardized and automated evaluation of tool condition based on image processing methods. The software provides a reliable analysis during tool preparation – **without additional time required!**

Key benefits of the AI measuring function:

- **High flexibility**
- **Fast results**
- **Efficient training process**
- **Future-proof and expandable**
- **High reproducibility**

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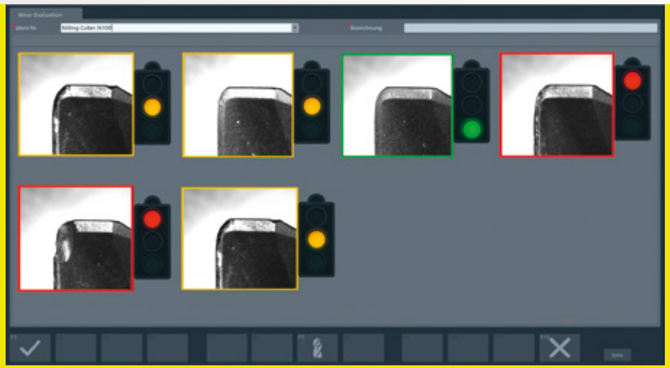
Clever ZOLLER Workflow in Five Technical Steps

ZOLLER »wearCheck« for tool wear analysis is designed for use on ZOLLER measuring machines such as »smile« or »venturion«. In combination with the ZOLLER image processing software »pilot 4.0« from version 1.20 with powered tool holder spindle, it enables structured acquisition, evaluation, and classification of wear images of your tools:



01. Definition of wear classes
Critical wear – categories such as “no wear”, “light”, or “critical” are defined.

02. Image acquisition and labeling
Images of tool cutting edges are captured with the ZOLLER measuring machine and »pilot 4.0« software, then assigned to the defined categories.

03. Start tool wear AI model training
On the ZOLLER measuring machine or via any device in the network, an AI wear model is automatically generated from the tool images recorded in step 02.

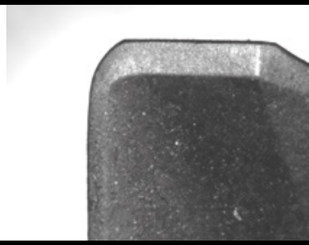
04. Assign tool wear AI model
The wear AI models are assigned to the tool identification numbers in »pilot 4.0«.

05. Automated wear classification and recommendation for action
The wear condition is detected during tool measurement and a recommendation for action is displayed.

Measuring Function »wearCheck« With Condition Classes

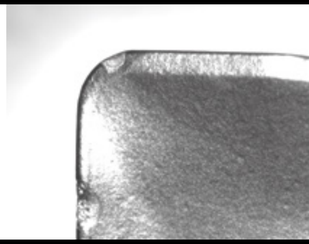
No wear

The current condition of the tool meets the requirements of the next use. No immediate action is required. Classification is made using **predefined categories** as “no wear.”



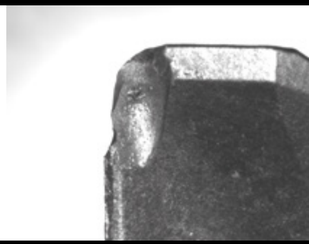
Light wear

Initial material removal is present and should be monitored. The software supports the user with standardized evaluation and guides the entire analysis process with **traceable recommendations.**



Critical wear

The determined data indicate a significant restriction of tool functionality. The system reliably detects this condition and provides a clear recommendation to replace or recondition the tool.



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