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:

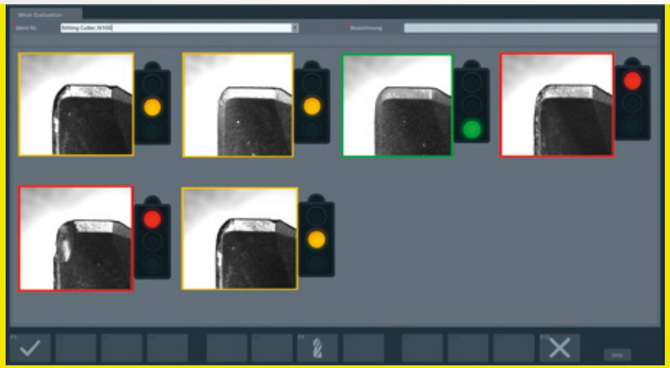
- **High flexibility**
- **Fast results**
- **Efficient training process**
- **Future-proof and expandable**
- **High reproducibility**

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.

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.

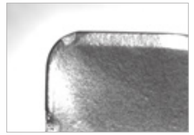
04. Assign tool wear AI model
The wear AI models are assigned to the tool identification numbers in »pilot 4.0«.

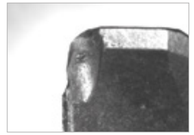
05. Automated wear classification and recommendation for action
The wear condition is detected during tool measurement and a recommendation for action is displayed.

Economic Efficiency of the Measuring Function »wearCheck«

Wear classification – in categories


No wear


Light wear


Critical wear

ZOLLER efficiency

≈ **10%** increase in service life

With the data-based AI measurement function »wearCheck« users are able to determine the exact tool life up to the actual end of tool life. With the measuring sequence integrated in ZOLLER »pilot4.0« integrated measurement sequence, **tool life is increased by an average of approx. 10-15%*.**

Case study tool costs per year: **300,000 €**
At least 10% increase in tool service life
Savings per year through AI-supported wear analysis: **30,000 €**

* Information is a reference value determined through evaluations. Savings may deviate depending on the application.

ZOLLER Automation Solutions – case study: ZOLLER »micBox«

Automated indexable insert change

AI-supported wear analysis is essential for automated production so that the wear level can be determined in the direct process and the decision to sort out or reuse your tools is fully automatic. Whether a cutting insert can be exchanged or reused is determined by the insert wear analysis on a milling cutter **directly in the ZOLLER »micBox«.**

Do you have questions? Arrange your consultation appointment at:
myzoller.com/de/de/expert

Your Customer Portal
www.myzoller.com

simple. direct. online.

ZOLLER Solutions

More speed, higher quality, safe processes – with ZOLLER, you increase the efficiency of your production. ZOLLER offers you outstandingly precise devices for adjusting, measuring and testing cutting tools, software, interfaces, cloud services and solutions for the automation of tool processes. You can combine all of this to create your individual system solution – on your way to the smart factory.

- Presetting & Measuring
- Tool Management
- Inspection & Measuring
- Automation

Everything from a Single Source.
Everything for your Success.
Everything with ZOLLER Solutions.

ZOLLER
expect great measures

Headquarters in Pleidelsheim
E. ZOLLER GmbH & Co. KG
Tool presetter and measuring machines
Gottlieb-Daimler-Straße 19 | D-74385 Pleidelsheim
Phone: +49 7144 8970-0 | Fax: +49 7144 8970-70191
post@zoller.info | www.zoller.info