

HEIDENHAIN



Tool Measurement and Inspection

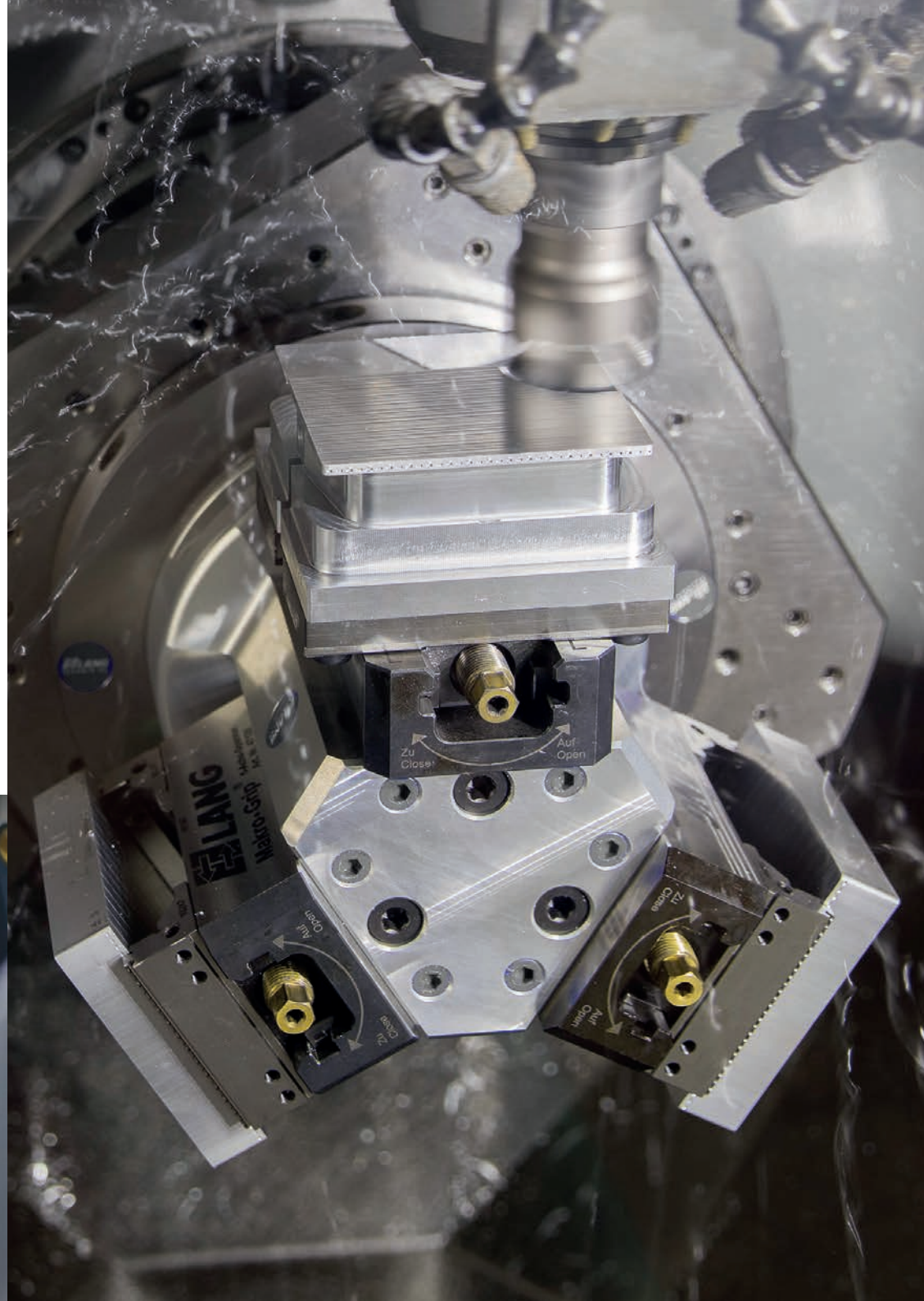
Effectively monitor and optimize machining operations

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Tools as performance factors

Production quality and process reliability are decisive factors that are significantly influenced by the tools involved in the machining operations. That is why the precise measurement of tool dimensions combined with cyclic inspection for wear and breakage is so important.

HEIDENHAIN offers various solutions for tool measurement and inspection: vision systems for inspection of cutting edges, touch probes for measurement of milling and drilling tools, and a breakage detector in order to detect broken tools. These systems are designed for permanent installation in a machine's work envelope. That way you seamlessly integrate tool measurement and status inspection in the production process.



VT 121 vision system

The VT 121 vision system from HEIDENHAIN measures the cutting edges directly in the machine. Worn or damaged tools are therefore detected very quickly and reliably. The vision system for tool inspection consists of the following components:

- VT 121 camera with two objectives
- Touch-operated VTC computer software

Applications:

- Visual tool inspection before critical machining steps
- Documentation of tool status and wear
- Contact-free breakage detection
- Panoramic images for inspecting the lateral cutting edges
- Inspection of flake faces and rake faces

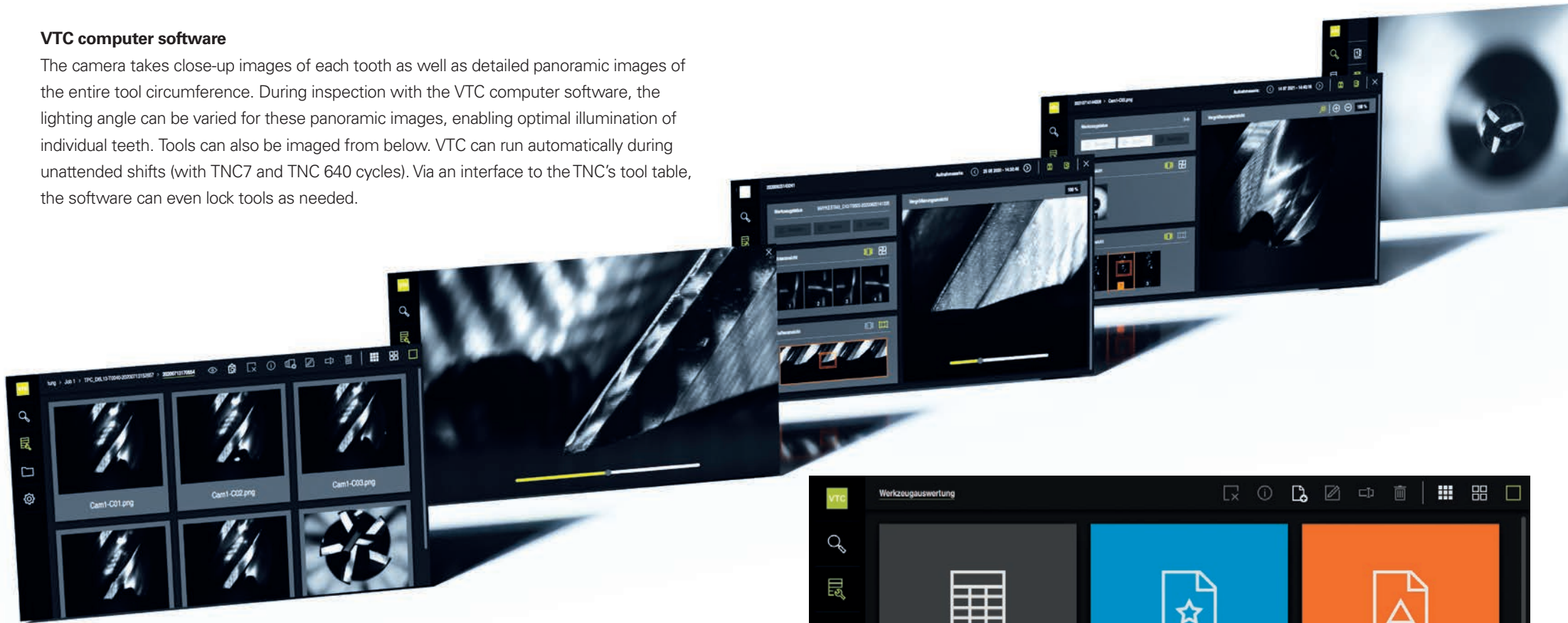
Your benefits:

- Fully automatable tool breakage inspection
- Efficient tool inspection in the machine
- Highly rugged design
- Compressed air efficiently cleans the workpiece and camera
- Automatic calibration and setup of the camera:
Separate TNC probing cycle for calibration

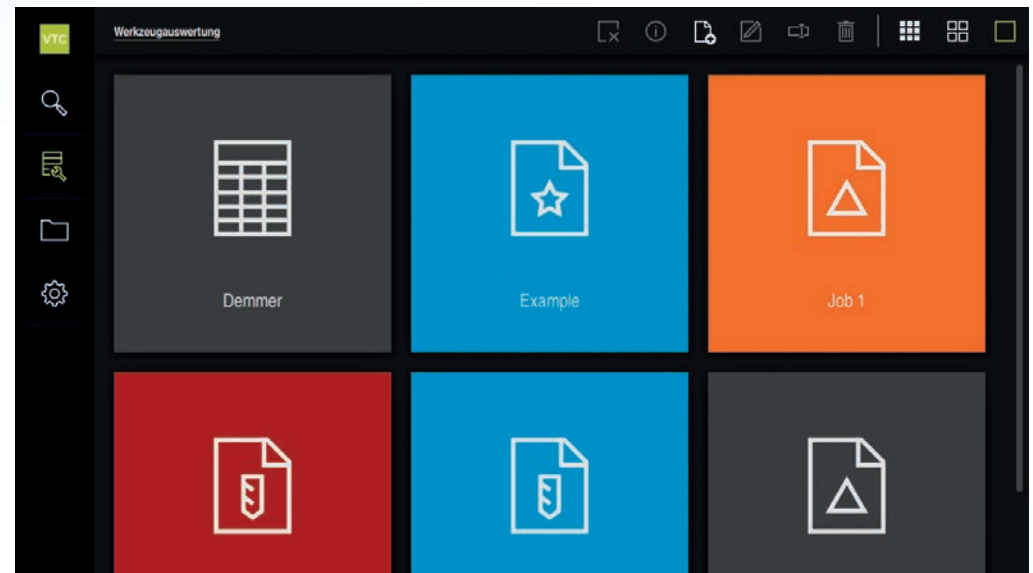


VTC computer software

The camera takes close-up images of each tooth as well as detailed panoramic images of the entire tool circumference. During inspection with the VTC computer software, the lighting angle can be varied for these panoramic images, enabling optimal illumination of individual teeth. Tools can also be imaged from below. VTC can run automatically during unattended shifts (with TNC7 and TNC 640 cycles). Via an interface to the TNC's tool table, the software can even lock tools as needed.



- Definition of the views in the imaging cycle
- Concerted evaluation through purposeful naming of image series
- Inspection overview with zoom window for clear view of individual images



TT 160 and TT 460 touch probes

The tactile TT touch probes let you measure your milling and drilling tools efficiently and reliably. Due to their rugged design and high degree of protection, these tool touch probes can be installed directly within the machine tool's work envelope. Tool measurement is possible at any time: before machining, between two machining steps, or after machining.

Applications:

- Continuous tool inspection
- Tool presetting
- Inspection of individual teeth

Your benefits:

- Fully automatable tool breakage inspection
- In-process tool inspection
- Simple installation and start-up
- Variable mounting with a wireless TT 460
- Automatic calibration after mounting and maintenance
- Rated break point protects the touch probe and spindle
- Sturdy and designed for a long life (≥ 50 million cycles)



TD 110 tool breakage detector

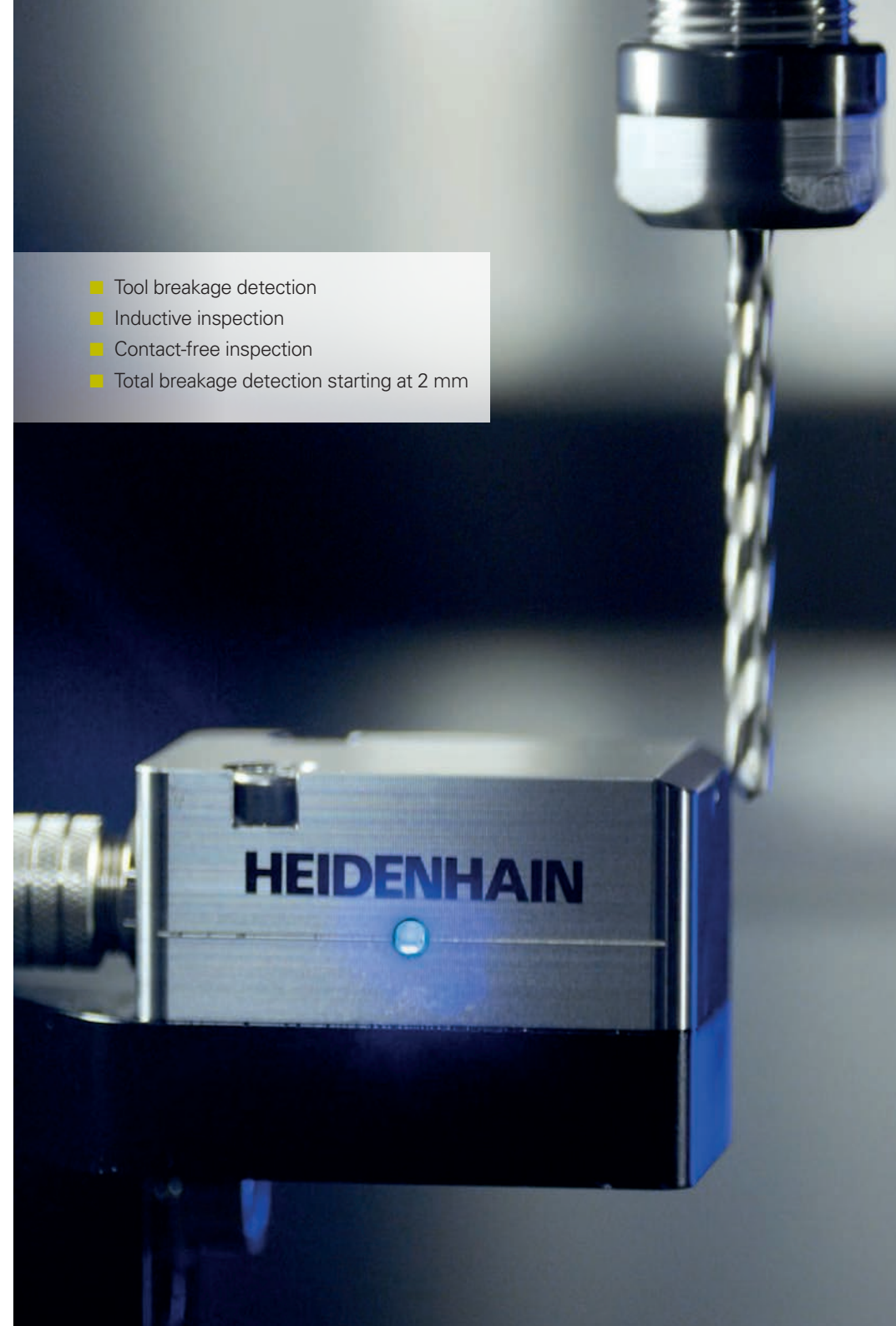
The inductively operating TD 110 tool breakage detector inspects tools as they pass by, saving much time when looking for broken tools. Even rotating tools moving at rapid traverse can be measured. The TD 110 can be placed anywhere in a machine's work envelope. Tool inspection can therefore take place at an ideal location, for example by integrating it in the tool exchange sequence. Thanks to the sensitive scanning technology, even very small tools made of HSS steel and carbide can be inspected.

Applications:

- Contact-free tool breakage inspection
- Inspection routine upon tool change

Benefits

- Particularly efficient breakage inspection
- Inspection at rapid traverse
- Sturdy design for installation in the work envelope
- Compatible with all controls with a touch probe interface
- Can be installed on the TNC over remote access



- Tool breakage detection
- Inductive inspection
- Contact-free inspection
- Total breakage detection starting at 2 mm



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