ToolScope

Full process control with ToolScope

Digital monitoring to optimise your procresses

CERATIZIT is a high-technology engineering group specialised in cutting tools and hard material solutions.

Tooling a Sustainable Future

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CERATIZIT GROUP

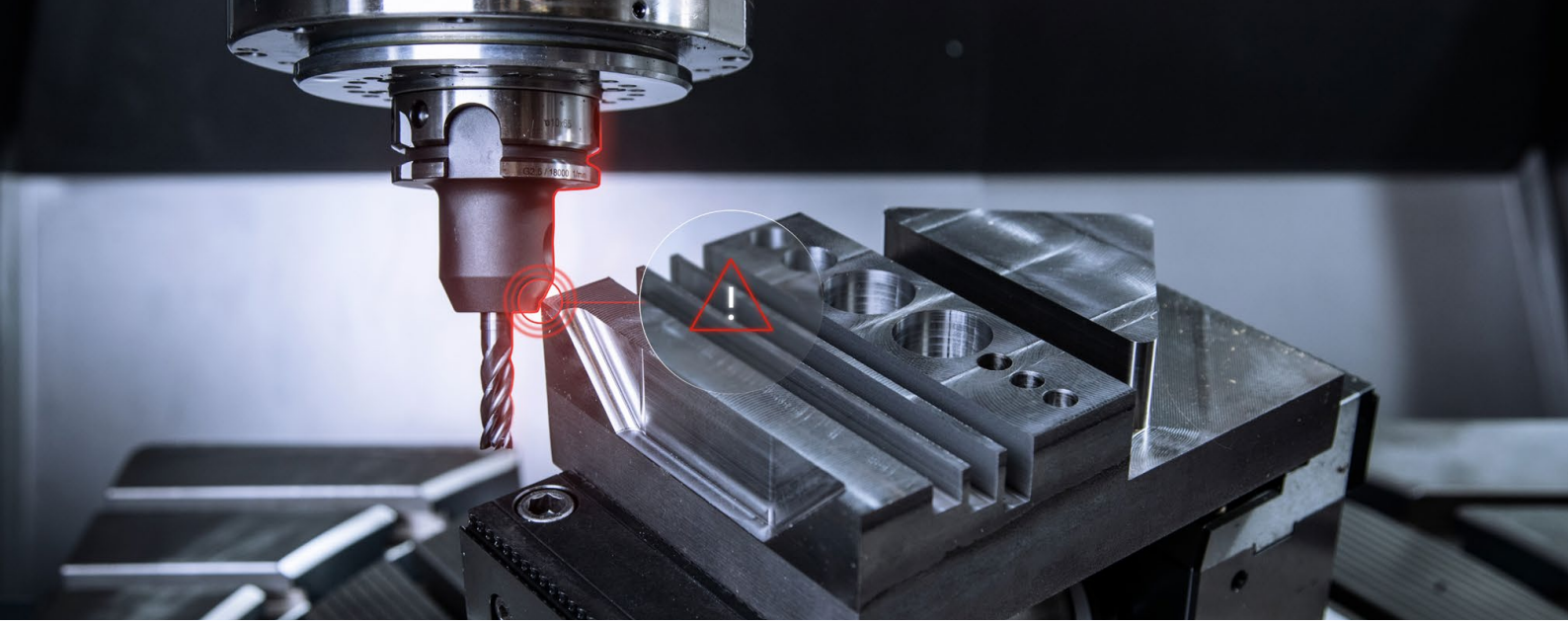
Why do you need process monitoring?

When milling machines need to work largely autonomously, you can‘t avoid automated monitoring of the tools being used and the connected processes. Cutting edge wear or tool breakage are just some of the aspects that can impair efficient production. However, thanks to quick-acting monitoring mechanisms, tool defects can be detected during machining and the process stopped before damage to the tool or workpiece jeopardises production.

ToolScope

With our ToolScope monitoring and control system, we are paving the way for digital machining.

Our system continuously records signals from the machine that are generated during the production process. This data is clearly visualised and used to monitor and adjust the machine in a number of ways. You can choose and combine different modules to customise your process control.



Keep a close eye on your processes with ToolScope

Process control

- Process data is collected, displayed and evaluated by ToolScope.
- Deviations are detected in real time.
- You can intervene in your production processes and with ToolScope this is fully automated too!

Machine protection

- The machine condition is monitored for maintenance purposes.
- ToolScope acts like an airbag inside the machine: in the event of impact collisions, an emergency stop is triggered even earlier than this would be done by the machine.
- This prevents overloading of the tool and the machine tool.

Documentation & digitalisation

- Data about the use of the tool is recorded for the tool service life analysis.
- The machine downtime analysis includes analysis of machine downtime and why it occurs.
- Full control over the workpiece: critical process parameters are documented to ensure the highest quality standards.

The key features of ToolScope at a glance

TS-PM: Process monitoring

ToolScope automatically learns the optimum workflow for your process and responds to any deviations in the machining operation.

- ▲ Detects tool breakages
- ▲ Reduces resultant damage to the tool, workpiece and machine
- ▲ Can be quickly and easily adapted to the production processes
- ▲ Enables unmanned production through 100% inspection of the workpieces

TS-WEAR: Wear detection

ToolScope identifies worn tools based on the average process force. This fully exploits the reserves of the tool, without risking tool breakage.

- ▲ Reduces tool costs/tool breakages
- ▲ Increases machine availability
- ▲ Optimises tool usage

TS-AFC: Adaptive feed control

Feed control accelerates the process where it is safe to do so and simultaneously protects the tool by intercepting load peaks.

- ▲ Reduces cycle times and provides overload protection
- ▲ Increases the tool service life
- ▲ Boosts machine availability
- ▲ Optimises processes
- ▲ Protects the machine

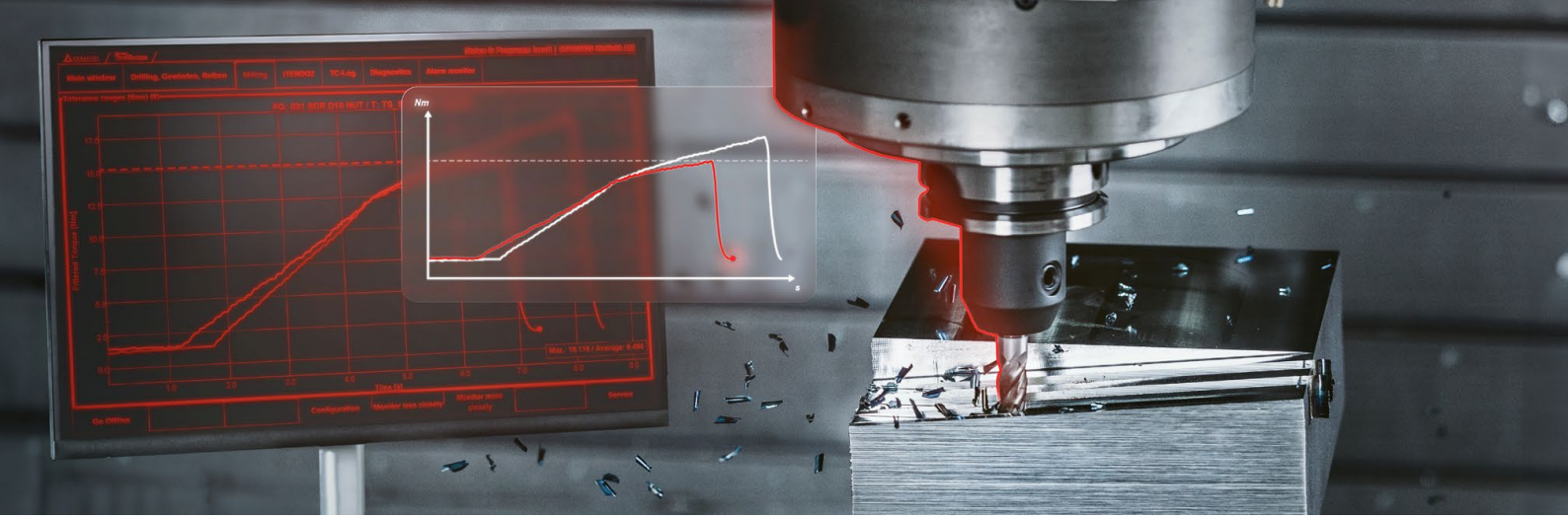
CD: Collision detection

Springs into action quicker than the machine allows! The ToolScope collision detection detects impact collisions using an acceleration sensor before the machine even reacts. An emergency stop is triggered in less than 1 ms to prevent major damage.

- ▲ Reduces damage to the tool and workpiece
- ▲ Lowers repair costs
- ▲ Reduces machine downtime
- ▲ Documents collisions

You'll find many other ToolScope functions and details at: https://cutting.tools/int/en/toolscope

Scan here!



Some of our customers have already achieved their goals...

Component: Fuel rail

Measures:

- ▲ Optimisation of the tool concept
- ▲ Adaptation of the machining strategy with ToolScope

Result:

- ▲ Reduction in cycle time of 15%
- ▲ Tool service life increased by 30%
- ▲ Process security increased by 25%

Component: Gearbox housing

Measures:

- ▲ Optimisation of the tool concept
- ▲ Adaptation of the machining strategy with ToolScope

Result:

- ▲ Reduction in cycle time of 12%
- ▲ ROI after 2 months

We can optimise your process too – why not throw down the challenge!

We get the best out of your processes and develop the ideal production process, tailored to your requirements!

The benefits of our service

- ▲ ToolScope functions individually tailored to your requirements
- ▲ On-site support with implementing new processes and components
- ▲ Training and software updates to keep you up to date
- ▲ Global network of experts with specialist knowledge in the machining industry and the digital sector

ToolScope featuring iTENDO²
Sensitive dream team for efficient processes

A duo for full process control, even in the smallest diameter range

Process monitoring with ToolScope is extremely reliable; especially for milling operations. In order to also determine reliable process data for milling cutters with diameters from 0.3 mm or for finishing processes, we also offer a package with the intelligent iTENDO² hydraulic holder. Its sensor system is so sensitive that it can even detect the smallest of vibrations, forward this to ToolScope and present it to the user.

Advantages/benefits of ToolScope x iTENDO²

iTENDO² combines the outstanding properties of hydraulic clamping technology with digital process monitoring via ToolScope in a tool holder. It is the heart of the system, providing precise process values through its ‘closest-to-the-part’ acceleration sensor. It feeds the data collected directly into the ToolScope system where it is visualised. If process faults arise, ToolScope intervenes in the machine control system.

- Communication between iTENDO² and ToolScope > reliable process monitoring and intervention in the machine by ToolScope in real time
- Tried-and-tested slim outside profile of the intelligent iTENDO² tool holder like a conventional hydraulic chuck
- No restrictions for the use of coolants
- Speeds of up to 30,000 rpm: suitable for use in a wide range of applications
- Customised product packages in combination with ToolScope:
  the right solution for every task and complexity level

https://cutting.tools/int/en/itendo2

ToolScope in action

Have the features of our ToolScope aroused your interest?
Want to find out more about how you too can optimise your machining operations with this smart monitoring system? Then take a look at the multitude of examples of successful applications using ToolScope.

https://cutting.tools/application-examples/toolscope

ToolScope built into your new machine ex works

Ordering a new machining centre or milling machine and want to quickly reap the benefits of the ToolScope features and our service? No problem! Thanks to our close cooperation with some of the leading machine manufacturers, you can add ToolScope when placing your order.

https://cutting.tools/toolscope-retrofit

ToolScope is compatible with all machines & controls!

Control systems

SIEMENS HEIDENHAIN FANUC

Cockpit

Optimal use of your digital production data with Cockpit

Is the digitalisation of machining not a vague concept for you, as you have a clear idea about what data you would like to have prepared and evaluated? Or are you far from this and seeking advice on which data can help you increase process control and achieve reliable tool monitoring?

CERATIZIT is the right partner in both cases, as our Cockpit combines all aspects of digital machining and provides you with a custom combination of evaluated data – from production data and machine data to tool data or even quality management data. This ensures that you have an optimum overview of your production processes at all times.

https://cutting.tools/cockpit

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