

Modular Assistance System ToolScope

NEW APPS

For YOUR Production The comprehensive Industry 4.0 solution

Together with our Partner CERATIZIT Hannover TYROLIT offers a comprehensive assistance system for your smart grinding process.

ToolScope assists your production by utilizing machine signals without the excessive use of external Sensors. Special apps help the end

user to access and evaluate machine data, production data and process data in a simple manner.

Monitoring



TS-PM

Tool / Process Monitoring

Self-learning tool / process monitoring of freely configurable parameters by means of statistical or adjustable tolerance limits

- + Process visualization gives rapid feedback to the operator
- + Detecting tool breakages, missing workpieces/ tools, incorrect clamping and faulty processes
- + Reduction of scrap parts, rework and tool overload



CD-xDim

Collision Detection

Detection of collisions and immediate triggering of the machine emergency stop (reaction <2ms)

- + Repair costs can be significantly reduced by triggering a collision emergency stop
- + Reduces costs and time spent in the event of a collision and minimises machine downtime
- + Minimises machine downtime



TS-CM

Condition Monitoring

Generate and document a fingerprint of the machine periodically

- + Actual machine tool condition is permanently visible
- + Maintenance support and specific search for machine tool problems
- + Greater predictability of maintenance measures

Assistance



TS-AFC

Adaptive Feed Control

Adaptive feed control by varying the feed rate suiting to the current process load on the spindle

- + Save cycle time by increasing the feed rate in case of low tool utilization (cycle time optimization)
- + Tool protection by reducing the feed rate in the case of overload
- + Ability to allow for variations in stock removal or fluctuations in hardness or material composition



TS-Wear

Wear Monitoring

Recognition of the actual state of wear and maximising utilisation of tool life, especially for electroplated grinding tools

- + Evaluation and optimization of tool life, especially not dressable grinding tools
- + Reserve display based on increasing process force
- + Optimizing and predictive planning of a tool change



TS-AD

Adaptive Dressing

Enables to monitor and to adapt the dressing cycle suiting to process related wear state of the grinding tool

- + Visualisation and documentation of the actual dressing cycle
- + No need of excessive security tolerances
- + Dress the grinding wheel only when necessary

Unique feature: Offline testing

Simulation environment for the assistance system can be downloaded free of charge

- + Reduction in machine downtime by preparing changes to settings offline
- + Changes to assistance system settings can be tested directly on the office PC using the time lapse function

Data analysis



TS-MDA

Automatic Shift Log

Providing operating states of the machine in a computer readable format, compatible with standard evaluation tools and databases

- + Enables to evaluate machine uptime, downtime and machine assignment by NC programs, etc.
- + With Excel file examples for evaluation of machine conditions



TS-Connect

Cloud database function

The connect application allows storing the process data in a local or worldwide available external database and supports all common protocols (FTP, SFTP, Samba)

- + Operating status data, tool change logs, etc. are made available by network push functionality to the company server or online cloud
- + Process data can be used and analyzed worldwide from every workstation in the company
- + Enables process documentation to be saved automatically for long term storage purposes



TS-QRep

Quality Monitoring / Documentation

Generation of a standardised monitoring protocol of production-critical and quality-relevant process variables in pdf format for each monitoring process

- + Automatic process documentation
- + Quality certification for customers
- + Special requirements for monitoring and documentation can be addressed



TS-TCLog

Automatic Tool Change Log

The automatic tool change log provides tool change data as well as tool life in computer-readable format

- + Analysis of tool life and reasons for tool changes
- + Technical assistance to reveal potential savings together with TS-PM



TS-Data Pro

Customized data generation

Generation of process-specific information in *.csv format for quick analysis of process variables

- + Provision of important process information (freely configurable)
- + Enables easy generation of process specific information



TS-MRM

Material Removal Monitor

Calculation of the actual removed material via machine internal signals and special algorithms

- + Visualisation and documentation of the actual ground volume
- + Quality control of pre-machining (e.g., turning tool wear) via trend analysis
- + First real evaluation tool to compare grinding tools

Additional benefit: Our service

TYROLIT is your partner to gain the utmost from your grinding processes. We are ready to support you with our expertise and experience in processes and tools.

Various service packages from tool optimization up to quality control

- + TYROLIT optimizes your tool usage, process time and the way you manufacture
- + Shorter cycle times through NC program adjustment and process sequence optimization
- + Maintenance of tools and assistance systems by TYROLIT

The assistance system for manufacturing

A comprehensive Industry 4.0 solution for manufacturing processes.

TYROLIT in cooperation with its partner CERATIZIT Hanover has created a milestone in Industry 4.0 in grinding technology: With the firmware version 11 ToolScope has become the comprehensive assistance system in production machining.

In order to generate the customer independent added value, TYROLIT is offering a number of applications known as apps, that can be simply licensed and activated. These allow users to easily access and utilize

the recorded machine, operating and process data. The new developments focus on ease of operation and modularity.

The system provides a method for quality control never seen before, in addition to the usual methods of process monitoring.

To complement these features, TYROLIT offers various services relating to tools and the ToolScope assistance system. This is not the only reason we are a strong and reliable partner at your side.



TS-PM
Tool / Process Monitoring



CD-xDim
Collision Detection



TS-CM
Condition Monitoring



TS-AFC
Adaptive Feed Control



TS-Wear
Wear Monitoring



TS-AD
Adaptive Dressing



TS-MDA
Automatic Shift Log



TS-Connect
Cloud database function



TS-QRep
Quality Monitoring / Documentation



TS-TCLog
Automatic Tool Change Log



TS-DataPro
Customized data generation



TS-MRM
Material Removal Monitor

TYROLIT SCHLEIFMITTELWERKE SWAROVSKI K.G.

Swarovskistraße 33 | 6130 Schwaz | Austria
Tel +43 5242 606-0 | Fax +43 5242 63398

Our **worldwide subsidiary companies** can be found on our website at www.tyrolit.com



Find us on social media
TYROLITgroup