

# Intelligent control of the process, no sensors and no parameters

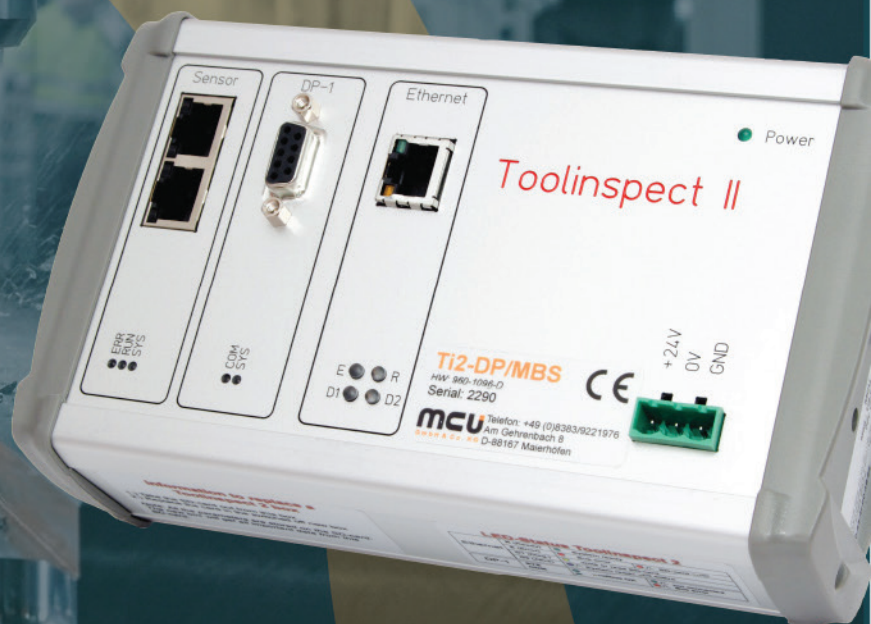
Solution  
Partner

Automation  
Drives

SIEMENS

Toolinspect monitors tools and machining directly from machine data,  
automatically adapting to operating conditions

- ✓ SENSORLESS TECHNOLOGY
- ✓ SELF-ADAPTIVE AND SELF-OPTIMIZING
- ✓ NO MANUAL PARAMETERIZATION
- ✓ PROCESS CONTROL BUILT INTO THE CNC



Uses data already available on the machine  
Zero additional hardware

# The advantages of **Sensorless technology**

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Toolinspect (SENSORLESS)

## FEATURE

### Installation

#### *Zero Hardware*

Direct software integration.

### Maintenance

#### *None*

No component exposed to chips or coolant.

### Initial costs

#### *Low*

A purely technological investment.

### Precision

#### *Excellent*

Leverages the motor's torque data.

### Reliability

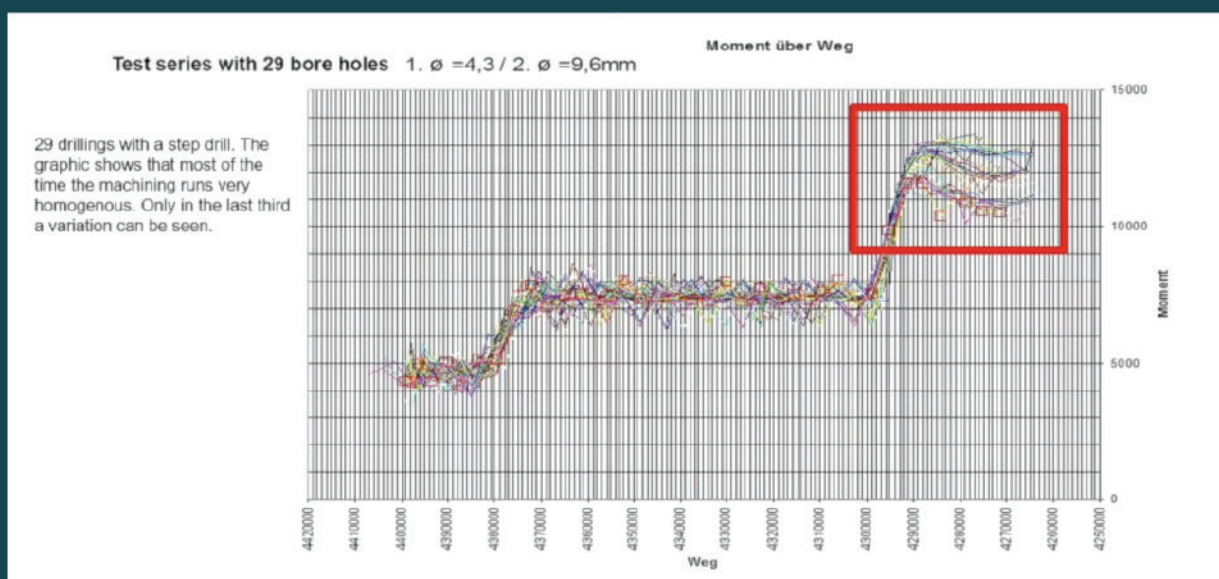
#### *Maximum*

Based on the drive's native data.

### Flexibility

#### *Scalable*

Easily deployed across multiple NC axes.



## Full integration. **Your CNC** becomes intelligent

Toolinspect uses the CNC's data directly, without adding hardware or modifying the machine.

**Compatible with the main CNCs** (Siemens, Fanuc, Heidenhain, Bosch Rexroth).

Monitoring runs continuously **during machining, with no impact on the production cycle.**

Instant display **through an intuitive, ready-to-use interface.**

# A system of advanced algorithms that requires no operator intervention

## How it works

Toolinspect reads the CNC's internal data (spindle torque, axis forces, position) and analyzes it with advanced algorithms.

- Automatically learns the process
- Calculates the optimal limits
- Adapts to production variations
- Monitors every stage of machining

Seamless integration with the main  
CNCs

Over 5,000 systems installed in the  
world's leading markets

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Toolinspect



CNC display/variables via TCP/IP

Transfer to a network drive

TCP/IP

Drive data transmission via fieldbus:

Profibus-DP  
Profinet  
Modbus



**SIEMENS**

**FANUC**

**Rexroth**  
Bosch Group

**HEIDENHAIN**



The system supports integration of B-Safe sensors, able to detect collision events with response times under 1 ms.

This enables timely crash management and advanced protection of the production process.



# Automatic control of the process, without adding a single cable

## No-compromise performance

Toolinspect monitors tools and process in real time by analyzing the machine drive data.

The system automatically selects control strategies, calculates the limits and adapts dynamically with no operator intervention.



## MCU Toolinspect features

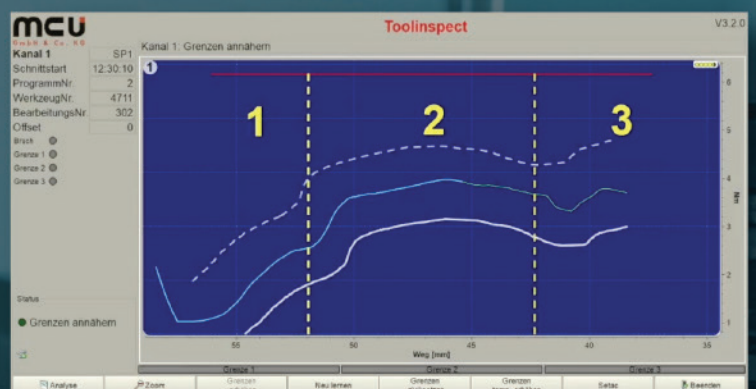
- ✓ Compatibility with various fieldbuses (Profibus-DP, Profinet, Modbus)
- ✓ Display available on multiple platforms (Windows® and Linux®)
- ✓ Multi-language support, with language switching directly during operation

### Multi-variable evaluation

Simultaneous analysis of spindle torque, axis feed forces and instantaneous position values

### Advanced algorithms

The process is split into independent segments for high sensitivity, preventing fluctuations from affecting the whole monitoring



- Self-learning of limits
- No manual parameterization
- Analysis via intelligent algorithms

# No sensor, maximum precision

The heart of Toolinspect is its user interface, designed to be intuitive and immediate.

## Tool breakage monitoring

Real-time detection with no delay. Sensorless CNC-data analysis, precisely identifying tool breakage even on small tools.

## Connectivity module

Data sent via TCP/IP with automatic handling. Traceability of cutting forces per part (DMC).

## Adaptive feed control

Automatic process optimization. Maximum stability with no operator intervention.

## Tool wear monitoring

Cuts costs by preventing wear. Tool-specific trend analysis and traceability.

## Machine condition analysis

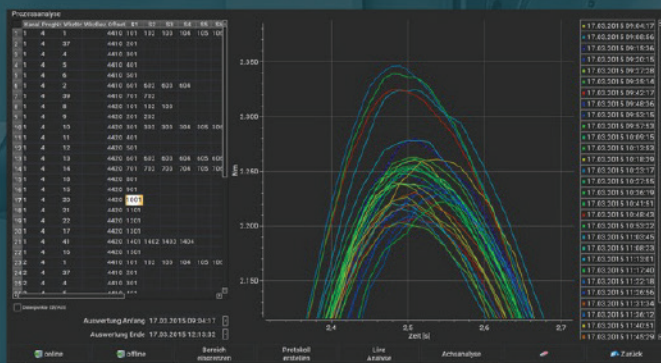
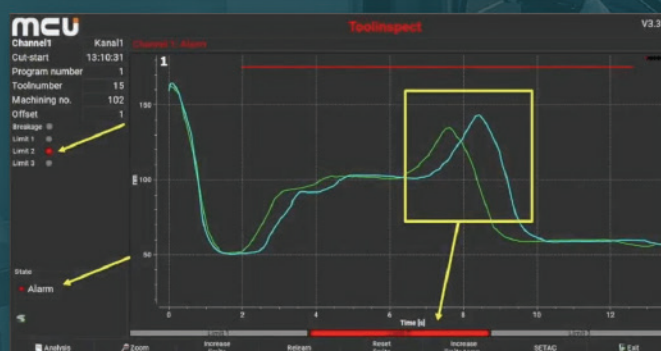
Periodic checks against reference curves. Detection of anomalies and performance variations.

## Process analysis built into the control

Analysis directly on the machine. Greater transparency and continuous process support.

## Investigative dashboard of collected data

Full traceability of machining data. Analysis and archiving of machining forces per tool.



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## **The new benchmark for intelligent process monitoring**

Intelligentia Smart Sensors' mission is to bring together technologies, industrial expertise and premium brands to deliver intelligent, reliable monitoring solutions, ready for the challenges of modern industry.

Intelligentia Smart Sensors' growth strategy rests on three key pillars:

- **In-house sensor manufacturing**
- **Acquisition of leading brands**
- **International technology partnerships**

*Your go-to partner, able to select and offer you the best technologies on the market and pinpoint the solution with the best price/performance ratio.*

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