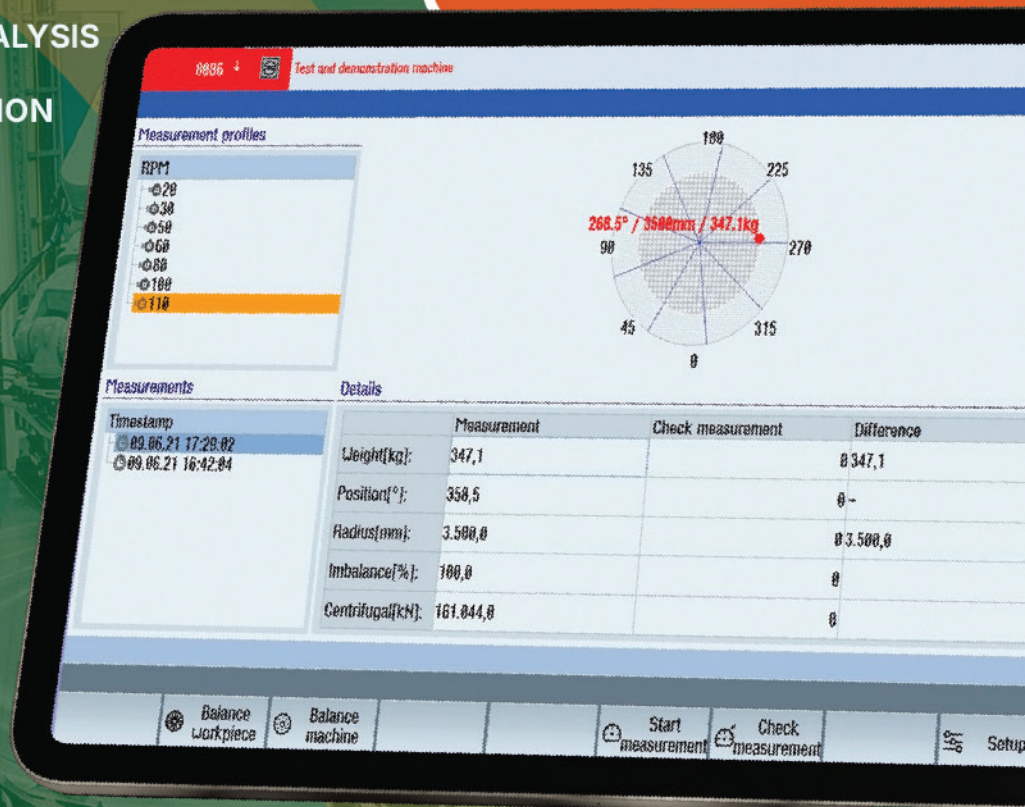


Sensorless imbalance detection on rotary tables

MCU Balance measures the torque on the axis motor to detect imbalance on the rotary table, with no additional sensors.

- ✓ IMBALANCE DETECTION ON ROTARY TABLES DURING BALANCING
- ✓ AXIS-MOTOR TORQUE ANALYSIS
- ✓ SENSORLESS IDENTIFICATION OF BALANCING POSITION AND WEIGHT

- RANGE: 5–300 RPM
- SENSORLESS TECHNOLOGY
- NO MACHINE CHANGES



The advantages of **Sensorless technology**



FEATURE

mcu
Balance

(**SENSORLESS**)

Installation

Zero Hardware
Direct software integration.

Maintenance

None
No component exposed to chips or coolant.

Initial costs

Low
A purely technological investment.

In-range 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

TourCNC becomes intelligent

MCU Balance reads the drive's internal signals directly. It requires no sensors and no hardware changes: it's a software extension of the CNC.

Universal compatibility

Currently available for Siemens 840D sl. Direct display on the CNC's HMI interface.

Background monitoring

Monitoring happens in real time during rotation, adding no idle time to the work cycle (Cycle Time)

Plug & Play interface

Once activated, the operator views the data directly on the machine monitor or on a dedicated panel, with ready-to-use charts

Why choose **sensorless technology**?

✓ **Immediate retrofitting:** Forget complex wiring or structural holes. The system integrates into the existing machine's logic cleanly and quickly.

✓ **Low-speed precision:** Wide range: operating from 5 to 300 RPM, suited to large tables with heavy masses.

✓ **High accuracy:** the system automatically compensates for the rotary table's intrinsic imbalance via a reference curve acquired during commissioning.

✓ **Operational reliability:** With no external sensors, there's nothing to break, get dirty, or need constant recalibration in harsh working environments.



Application sectors: where it makes the difference?

Sensorless technology is especially effective where stability is everything:



AUTOMOTIVE & LARGE ENGINES

Perfect for machining flywheels, brake drums or cylinder heads of large marine/industrial engines, where rotating masses are high.



ENERGY & POWER GEN

Ideal for turbine components or large bearings, where dynamic balancing on NC tables is critical to the final part's service life.



AEROSPACE

For rotary-table machining of critical components in special alloys, where imbalance would compromise part certification.



GENERAL MACHINING

Ideal for machines with NC rotary tables where part imbalance affects machining quality.

Improve your production today, without adding a single cable



- ✓ Maximum precision
- ✓ Zero invasive installation
- ✓ No-compromise performance

During machining, an undetected imbalance on the rotary table causes vibration, premature wear and scrap. **MCU Balance** avoids adding physical sensors.

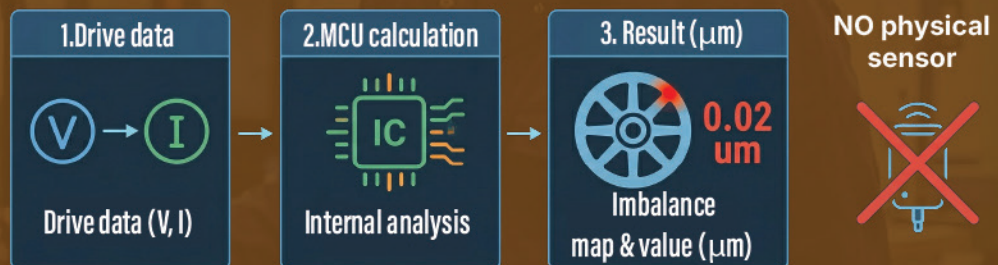
MCU Balance revolutionizes the balancing of rotary tables.

Unlike traditional systems with physical sensors, it uses the torque measured internally by the drive to identify imbalance on the rotary table and show exactly where and how much weight to apply.

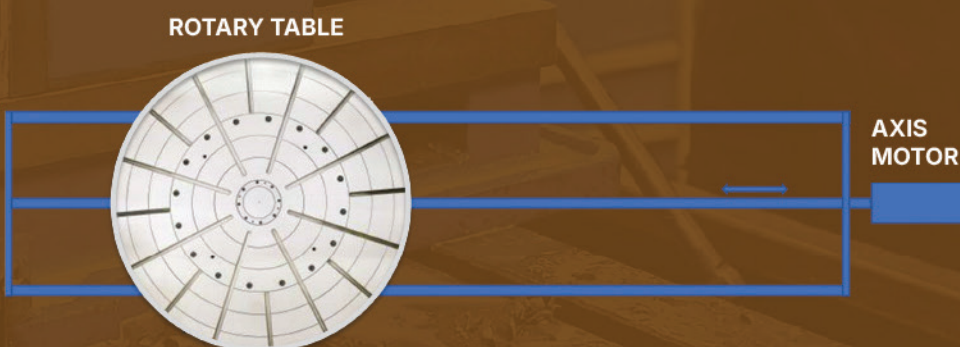
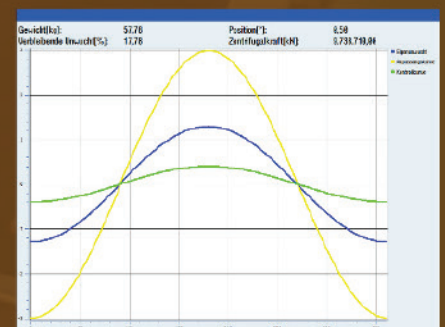
MCU Balance analyzes:

- Torque on the axis motor carrying the rotary table
- Angular position of the rotary table. Through advanced algorithms, the system determines the magnitude of the imbalance and the exact position (in degrees) at which to apply the counterweight.

How it works



The system measures the torque of the axis motor carrying the table during rotation. The resulting sinusoidal curve reveals the magnitude and angular position of the imbalance.



Graphical interface: precision at a glance

The heart of MCU Balance is its user interface, designed to be used even by non-expert staff

Intuitive polar map

The software generates a circular chart showing exactly where the imbalance is. The operator doesn't have to "guess": the system indicates the exact point (in degrees) where the counterweight must be fitted.

"Before/After" bar chart

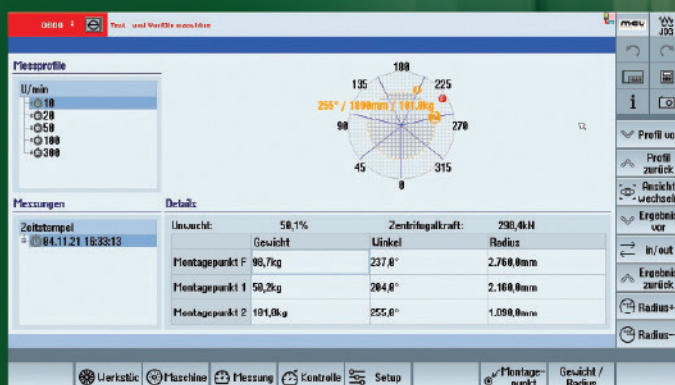
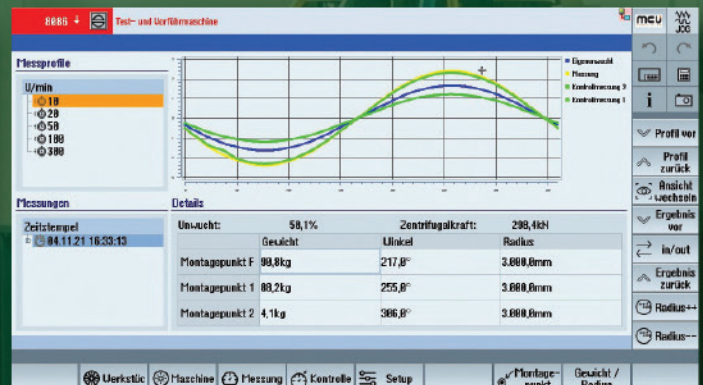
An at-a-glance view that certifies the improvement, ideal for quality control and production records.

Weight suggestion (Compensation)

The system doesn't just identify the imbalance — it also suggests the optimal correction. It indicates the exact position and the amount of mass to apply, enabling fast, precise balancing with no trial and error.

Process trend

The system records and displays how the process evolves over time, making it possible to spot drift, instability and progressive variation. This enables preventive action before critical problems arise.



Fast, precise balancing

A guided process with no trial and error: the system indicates the position and weight of the counterweight



Extended machine life

Less bearing wear and longer rotary-table life



Zero additional sensors

A purely software solution, with no work on the cabinet or the machine



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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