

MARPOSS Case Study

CHIP-IN-SPINDLE DETECTION AVOIDANCE OF CONCENTRICITY ERRORS DURING MACHINING

PROBLEM

High-speed cutting operations, especially of Aluminium, on 1-spindle machining centres with automatic tool change. This can cause misalignment of the toolholder when clamped to the spindle cone, affecting the quality of the work piece.

SOLUTION

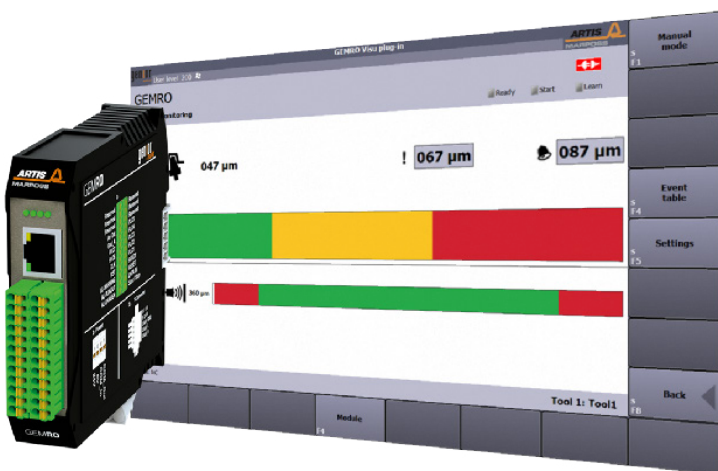
GEMRO system for tool holder run-out detection provides reliable chip detection between tool holder and spindle cone through contactless eddy current sensor (CS51) + measuring electronics (CS28HF amplifier) data.

APPLICATION

During machining especially of Aluminium parts a large amount waste dump of chips is produced. Mainly with horizontal 1-spindle machining centres, this can cause trouble during automatic tool change, when chips get stuck between tool holder and spindle cone, causing misalignment at the tool holder and run-out, affecting the quality of the work piece.

GEMRO identifies chips down to 10 μm at the collet chuck or at the spindle seat.

- ✓ Measuring time 0.6s with a +2 μm repeatability
- ✓ 2 run-out alarms for up to 127 tools (warning, run-out)
- ✓ 1 sensor position alarm
- ✓ Independent of NC-type due to its hardware I/O interface
- ✓ Discrete wiring of GEMRO
- ✓ Each Run-out alarm is recorded in the Black Box inside GEMRO module
- ✓ Two options for visualization of measurement data:
 - via Windows PC/operator panel
 - via IPC4, compact 4-inch operator panel
- ✓ Stand-alone system

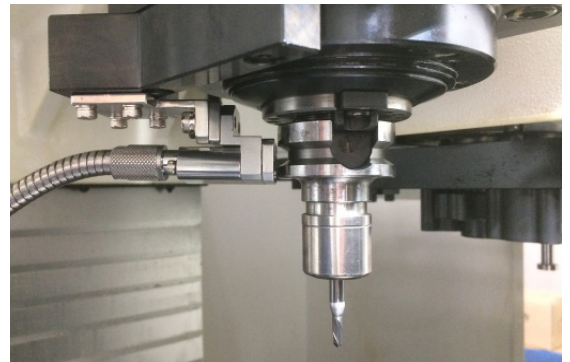


BENEFITS

- ✓ Early detection of machining deviations possible
- ✓ Reliable function even with interrupted shank surfaces (notches)
- ✓ Check of the correct sensor position for good sensor performance and repeatability of signals
- ✓ Due to initial sensor calibration and permanent monitoring of sensor position the system has a high and reliable repeatability with run-out detection
- ✓ Avoidance of unnecessary operator interventions with significant time savings and increase of output
- ✓ In case of alarm, the spindle seat has to be cleaned. Linked to GENIOR MODULAR by plug-in, automatic cleaning procedure can be effected.

MARKET

Automotive-, Aerospace- and Railcar Industry, when Aluminium parts are processed by 1 Spindle horizontal machining centres, e.g. machining of cylinder blocks and -heads.



To find out more about our GEMRO system please visit the website:
<https://www.marposs.com/eng/product/tool-holder-runout-detection>