

Data sheet

- software-only solution for Siemens control systems
- in-process monitoring of rotating shaft tools
- missing tool detection
- call via NC command
- sensor-free process
- no sensitive sensors in the machine working area
- independent for each NC channel
- also suitable for small Siemens control systems
- distance or time-controlled
- no configuration necessary in the PMC
- ideal for retrofitting

OCON S Tool monitoring Simple Tool Check



Application

Secondary damage resulting from unnoticed tool breakage may occur when incompletely machined parts reach downstream machining stations or even the user.

OCON S recognises such production faults at the latest during the next machining process with the same tool.

Use

One ideal use of **OCON S** tool monitoring is to be found in mass production. For this the processes must be easily reproducible, i.e. fluctuations in dimensions and hardness must lie within the normal tolerance range and the spindle speed must be reached before machining commences. In such cases shaft tools from a diameter of 3 mm upwards in steel (depending on the spindle performance) can be monitored for 'missing'. In-process monitoring has the advantage over post-process monitoring (as in optical or mechanical systems) that the monitoring process requires less time.

Function

OCON S is a monitoring software program based on a Compile cycle, which is installed in the Siemens 840D control system (see requirements). In this process the torque data of the spindle and feed drives in the drive controls are evaluated. Monitoring takes place entirely in the NC core by measuring the signal strength for a specific point in time or distance.

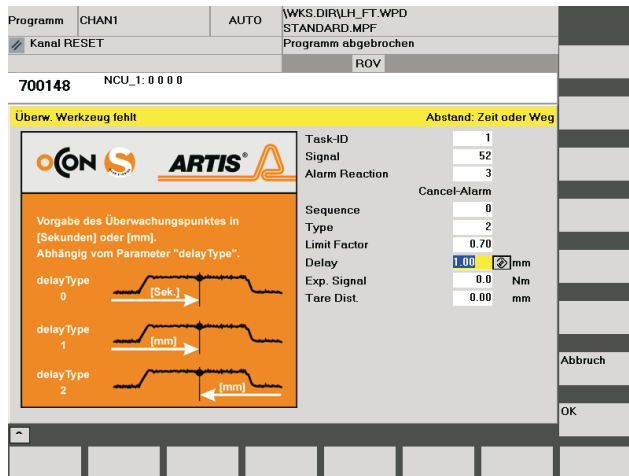
Depending on the process, it is possible to change flexibly between the spindle and/or feed axle.

For example, evaluation of the feed axle is often better for monitoring small tools.

For installation at least one command for each tool to be monitored is required in the NC program.

During the first machining process the tool monitoring system finds the relevant data for the GUDs. Start-up of **OCON S** can be supported by the Siemens Tool SinuCom NC (although as a rule this is not necessary). The Servotrace can be used for a rapid check.

Data sheet



Features of OCON S

- Software-only solution for Siemens control systems
- Monitoring can be activated for each NC channel so that several machining stations can be monitored in parallel
- Monitoring of up to 10 rotating shaft tools for 'missing'
- Minimum effective diameter of the tools to be monitored: 3 mm in steel (depending on the spindle performance)
- evaluation of internal drive data (no sensor installation)
- Distance-dependent monitoring
- Idling compensation (zero setting for idling) increases the reliability of monitoring
- All current settings are stored in the control system and can be secured using the control data backup
- Support of optimal monitoring setting using SinuComNC (not included in package)

Tool monitoring Simple Tool Check

NC control requirements (as at 2005-06-23)

- NCU 573.3-5
NCU 572.3-5
NCU 571.3-5
- PCU20, PCU50, PCU70 or MMC103
- NC software version as of 6.05.11
- SRAM for GUDs:
60 cuts -> approx. 1 Kbyte SRAM
120 cuts -> approx. 2 Kbyte SRAM
- The Compile cycle requires approx. 150 Kbytes of so-called heap memory (DRAM), which is normally available
- Also for Solution Line

Example NC program

```

$AC_Marker[5]=0;
CC_START_TASK
("MissingTool",1,102,'b00010',2,2,0.7,1,0,0.1);
T2 D1 S1=2500=3 M1
G17
G0 X0
Z1.5
G1 G95 F0.07
CYCLE83 (2,0,1,-45,0,-10,0,5,0,0,0,8,1)
G0 Z50
CC_STOP_TASK("MissingTool",1);
M30
    
```

Learn On/Off

Activate monitoring

Deactivate monitoring

Meaning of parameters (as at 2005-06-23)

"MissingTool"	task name
1	task number
102	activated axle (Z axle, torque)
'b00010'	alarm link axle stop
2	Sequence
2	delay type 2: measurement of final position
0.7	missing tool limit (70%)
1	path to final position (1mm)
0	Expected measured value
0.1	Zeroing distance

Scope of delivery

- operator manual with examples
- CD with Compile cycle (ELF file), example NC programs and documentation

Tool monitoring with OCON S

