

SPIKE

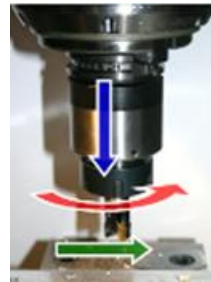
Sensory tool holder

New Software
Upgrade 2016

promicron
wireless solutions

- Drilling
- Milling
- Grinding
- Tapping
- Reaming
- Friction Stir Welding

In-process measurement of Cutting Forces



Measurement channels:

- Axial force
- Torque
- Bending X axis
- Bending Y axis

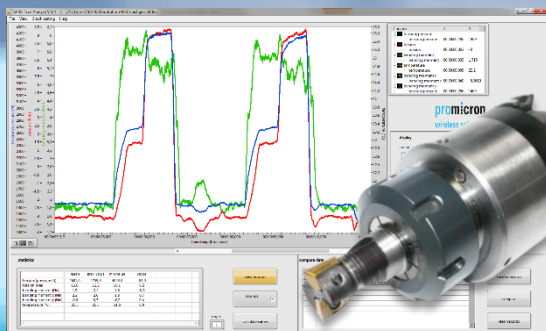
The sensory tool holder SPIKE® is able to measure the forces and torque occurring during machining real-time, directly at the tool where these forces originate. The data acquired is then wirelessly transmitted to a receiver and attached computer.

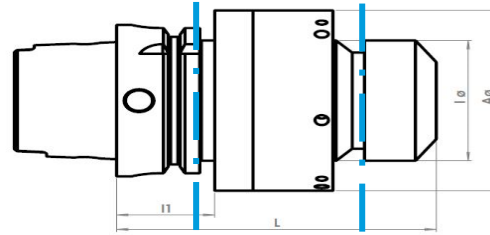
Special features:

- Wireless – no cables to be damaged in the machine.
- Ideal for mobile use (e.g. right on the shop floor).
- Reliable data transmission to outside the machine.
- Effortless measurements can be made by the machinist.
- “Bending moment” utilized as an essential parameter.
- Data easily analyzed and manipulated with proprietary software.
- Several tool holders can be connected to one receiver.
- Optional: SPIKE® Tool Analyser Software for quick and efficient reporting and documentation.

Benefits/Areas of application

- Increased flexibility for tool development.
- Impartial assessment and evaluation of tools.
- Tool life projections and optimization.
- Documentation of process quality.
- Machine analysis and optimization.
- Process improvement.
- Application engineering.





Interface

- ▶ HSK 40, 50, 63, 100
- ▶ TC/SK 30, 40, 50
- ▶ BT 40
- ▶ CAT 40, 50
- ▶ Cylinder shaft

SPIKE

- I Ø [mm]:
30 – 32 – 36
40 – 46 – 50
60 – 61
- A Ø [mm]:
59.8 – 62.5
75.0 – 83.0

Clamping system

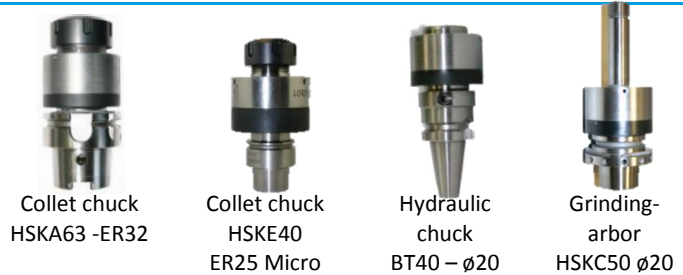
- ▶ Collet chuck ER 20, 25, 32, 40
- ▶ Precision collet chuck NBC20, 16
- ▶ PowRgrip PG 25
- ▶ Hydraulic chuck
- ▶ Grinding arbor
- ▶ Weldon, Syncro shaft, adapter

Technical data

Automatic tool changer compatibility:	Yes
Number of wireless channels:	4
Data transmission frequency:	GHz 2,45
Sampling rate per channel:	Hz up to 2 kHz
Resolution of measured values:	15 bit
Maximum allowed rotational speed:	rpm 18.000
Signal transmission range:	m 2-3
Battery life time / charge:	h up to 12 h
Charging time:	h 4
Dynamic balancing quality:	G 2.5
Coolant system compatibility:	Inside / Outside
Raw data output:	.txt file
Firmware update possible:	Yes

Examples:

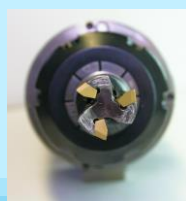
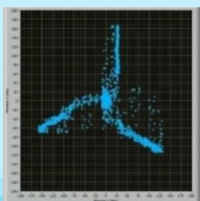
(Other sizes / unique holders on request)



Measuring range	Axial	KN	60	6	60	20
	Torque	Nm	400	45	400	160
	Bending	Nm	400	45	400	160
Resolution (w/o. f.)**	Axial	N	< 5	< 0,5	< 5	< 1,2
	Torque	Nm	< 0,03	< 0,003	< 0,03	< 0,01
	Bending	Nm	< 0,03	< 0,003	< 0,03	< 0,01
Dimensions	Ø	mm	75,0	62,5	62,5	62,5
	h	mm	37*	37*	37*	37*

**w/o f.: without filter

* Optionally the sensor ring can be delivered in a „shorter version“ with a height $h \geq 31\text{mm}$ (with less operating time).



One distinctive feature of the SPIKE[®] is the display of values using polar diagrams. The bending moment applied on the tool during machining is shown as a function of the angle and plotted on a graph. This allows the depiction of applied forces on each cutting point, e.g. in milling processes. During drilling, imbalances and lateral strains or pressures can be displayed.