



# Measurement While Drilling (MWD) Tools

**MICON-DRILLING**  
Drilling Equipment Made in Germany

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## Company Profile

The MICON-Drilling GmbH is a worldwide operating service company, specialized in sales and rental of drilling equipment. Decades of experience, high quality standards and focused customer orientation are our unique selling points.

We are a member of the MICON Group, established in Nienhagen/Germany, in 1994. The privately owned company specializes in design, production, inspection and repair of drill string components, drill bits, sophisticated directional drilling systems and additional equipment. Our main focus lies on the technical service for drilling applications in the mining, oil & gas, tunneling and geothermal industries.

An innovative engineering department ensures continuous optimization of all MICON products. Additionally, we are in close contact with a network of several German universities to foster research and development activities.

The MICON Group manufactures drilling equipment in two independent facilities on state-of-the-art CNC milling, turning and welding machines. Latest technology and implementation of German engineering guarantee the highest degree of efficiency and quality.



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MICON Buildings "Im Nordfeld", Nienhagen/Germany



MICON Buildings "Breite Horst", Nienhagen/Germany

## Quality Policy

MICON stands for high quality products Made in Germany. This high quality standard builds the basis for our success and is an integral part of the company policy. This is reflected by long-term and trustful cooperation with our customers.

In order to achieve our high quality objectives the MICON Group manufacturing companies have implemented quality management systems certified according to international standards. The actual certification status of the Group companies is as follows:

MICON Downhole-Tools GmbH:

- ISO 9001:2015 - 0019058
- API Spec. Q1 (No. Q1-4689)
- API Spec. 7-1 (Monogram License 7-1-1271)

MICON GmbH & Co.KG:

- ISO 9001:2015 - 00007159
- ISO3834-2:2006 (D-ZE-16083-01-00-ISO3834-2019.0013.002)

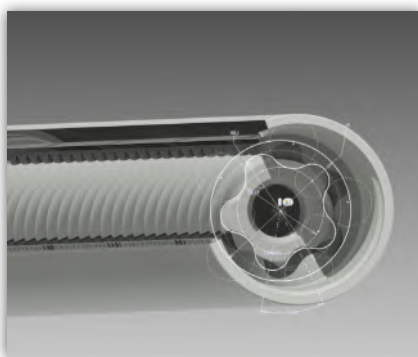
Our global quality objectives lead to specific targets, which are defined by the top management in cooperation with the quality manager. The fulfilment of these specific quality targets is evaluated at least every 12 months in the management review. Our ambition is product reliability and quality that meets the customer requirements as well as your high quality standards. The MICON product cycle includes different process steps. Rigorous acceptance criteria at every process step ensure a consistent high quality level of each product.



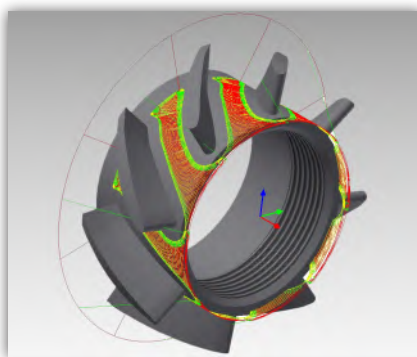
7-1-1271



Q1-4689



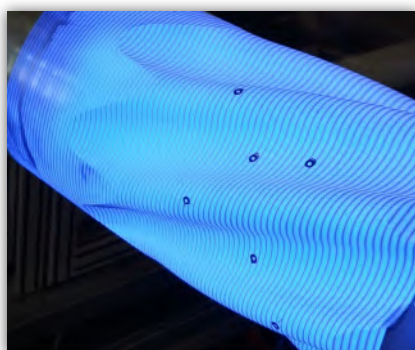
CAD based product development



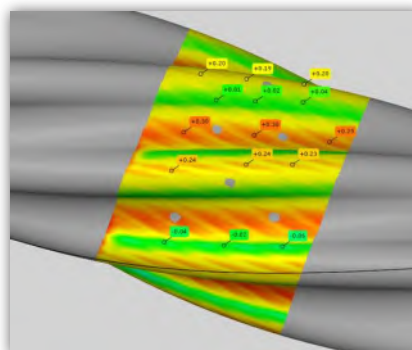
CAD – CAM manufacturing



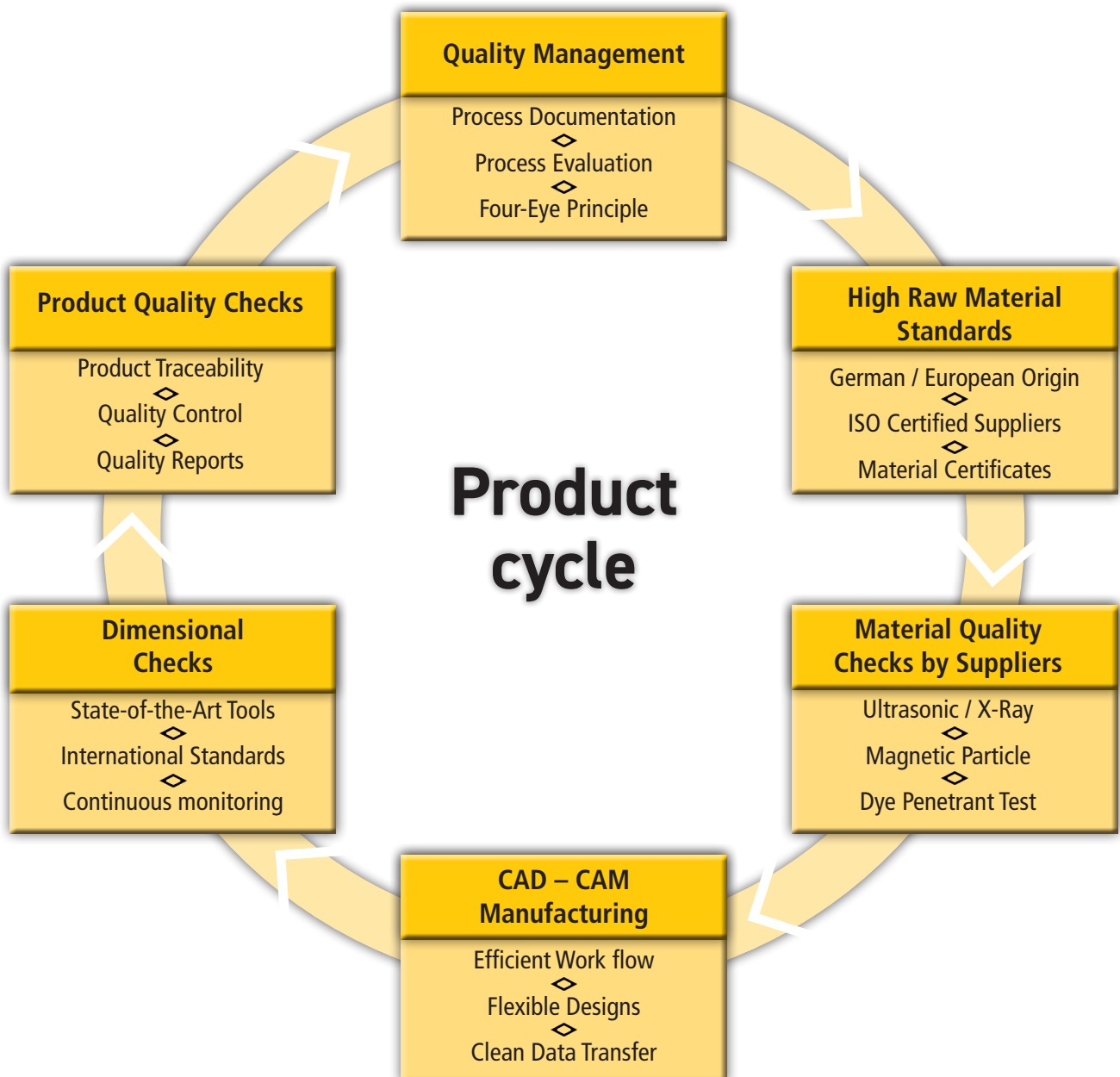
Permanent quality checks



High resolution 3-D scanning



3-D scan evaluation



## Measurement While Drilling (MWD) Tools

Our MWD tools are the best choice for real-time directional borehole survey applications. In combination with a downhole motor, the MWD tool enables precise and reliable directional drilling operations.

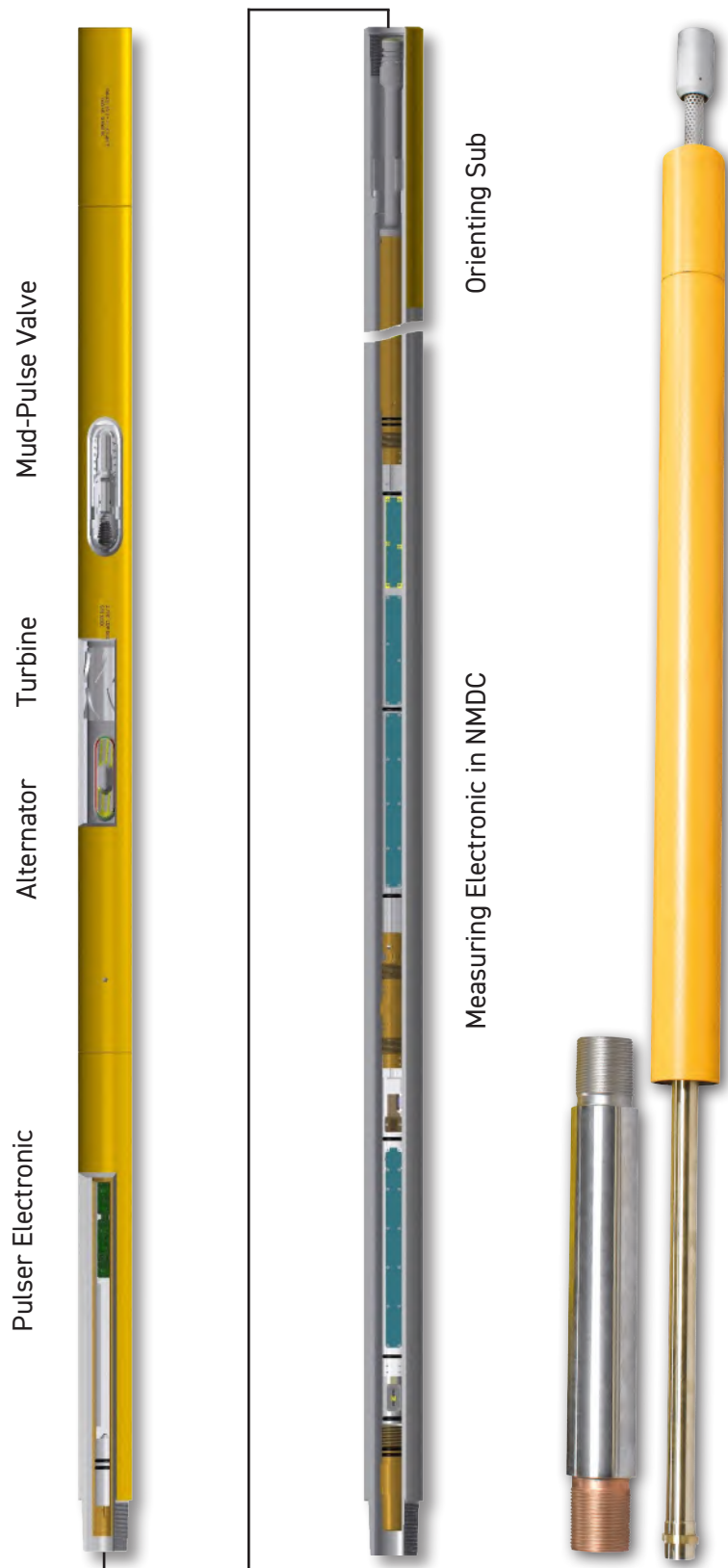
The tool uses accelerometers and magnetometers to measure the inclination and direction of the well bore. All generated data is directly transmitted to the surface by applying the positive mud pulse technology. These measurements allow a real-time determination of the well bore path and position in the three-dimensional space.

The MICON MWD tool is equipped with a generator turbine that supplies the tool with energy. A battery backup prevents data loss in case of any mud flow interruption. Due to the combination of these two energy sources, very long in-hole operation times can be performed.

All electronic components are protected by a pressure resistant case made of ultra high strength alloy steel. Additionally, a special resin embedding material protects against shock and vibration influences.

The tools are available with two temperature ratings. The standard version covers up to 70°C. 150°C can be reached with the lithium power backup.

We supply our MWD system in five sizes (2<sup>7</sup>/<sub>8</sub>", 3<sup>1</sup>/<sub>2</sub>", 4<sup>3</sup>/<sub>4</sub>", 6<sup>3</sup>/<sub>4</sub>" and 9<sup>5</sup>/<sub>8</sub>"), covering most common borehole diameters.



Model (left) and photo (right) of MWD tool



## Technical Data

Measurement While Drilling (MWD) Tools										
Parameter	MWD 2 <sup>7</sup> / <sub>8</sub> "		MWD 3 <sup>3</sup> / <sub>4</sub> "		MWD 4 <sup>3</sup> / <sub>4</sub> "		MWD 6 <sup>3</sup> / <sub>4</sub> "		MWD 9 <sup>5</sup> / <sub>8</sub> "	
	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial
Tool OD	73.0 mm	2 <sup>7</sup> / <sub>8</sub> "	95.2 mm	3 <sup>3</sup> / <sub>4</sub> "	120.6 mm	4 <sup>3</sup> / <sub>4</sub> "	171.5 mm	6 <sup>3</sup> / <sub>4</sub> "	244.5 mm	9 <sup>5</sup> / <sub>8</sub> "
Tool Length *	2 m	6.6 ft	2 m	6.6 ft	2.3 m	7.5 ft	2.4 m	7.9 ft	3 m	10 ft
Inclination	+/- 0.2°									
Azimuth	+/- 1.0° (Inc.>20°; Dip.<70°)									
Tool Face	+/- 0.5°									
Gamma (opt.)	65 µT (±0.65 G), 0 - 511 API counts/second (30 second intervals), +/- 5% accuracy									
Sensors	3 Axis Magnetic and Inclination Sensors, Natural Gamma (optional)									
Data	Inclination, Azimuth, Tool Face, Temperature, Generator Voltage, Natural Gamma (optional)									
Data Transm.	Positive Mud Pulse									
Power Source	Turbine Driven Generator with Memory Backup									
Min. Flow	150 l/min	33 gpm	200 l/min	44 gpm	350 l/min	77 gpm	600 l/min	152 gpm	1900 l/min	418 gpm
Max. Flow	450 l/min	99 gpm	550 l/min	121 gpm	1000 l/min	220 gpm	3000 l/min	660 gpm	4600 l/min	1012 gpm
Pressure	STD: 300 bar / 4,350 psi, HP: 800 bar / 11603 psi									
Temp.	0-150 °C / 32-182 °F (STD: 70 °C, HP: 150 °C)									
Shock	1000 g									
Vibration	25 g									
Top Conn.	2 <sup>7</sup> / <sub>8</sub> " CDP Box		2 <sup>3</sup> / <sub>8</sub> " IF (NC 26) Box		3 <sup>1</sup> / <sub>2</sub> " IF (NC 38) Box		4 <sup>1</sup> / <sub>2</sub> " IF (NC 50) Box		7 <sup>5</sup> / <sub>8</sub> " API Reg Box	
Bottom Conn.	2 <sup>3</sup> / <sub>4</sub> " CDP Pin		3 <sup>1</sup> / <sub>2</sub> " CDP Pin		3 <sup>1</sup> / <sub>2</sub> " IF (NC 38) Pin		4 <sup>1</sup> / <sub>2</sub> " IF (NC 50) Pin		8 <sup>1</sup> / <sub>8</sub> " API Reg Pin	
Case Material	nonmagnetic according to API Spec. 7									

\* Tool Length without Non-Magnetic Drill Collar (NMDC).

## Notes





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