RMP System

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High-Precision, Non-Contact

RMP Surface Roughness Measuring System

Profile-Based Surface Roughness Measurements According to Common Standards

- ✓ Inspection of technological surfaces and micro-structures following all common production processes (turning, milling, honing, polishing, coating etc.)
- ✓ Measuring flat surfaces and rotationally symmetrical components (bearing seats, valves and valve seats, high-precision components for the automotive industry and its suppliers / Powertrain)
- ✓ Measurements in hard-to-access spaces and cavities

Controlling Quality, Process Operation and Functionality

- ✓ Quality assurance (for instance of components with tribological or functionally critical tolerances)
- ✓ Control of tool wear and tear
- ✓ 100% inspections

Standalone and Inline Solutions

Compact, High-Speed Surface Roughness Measurements

The surface structure of high-precision components plays a key role in determining the functional properties the final product will possess. The fionec RMP surface roughness measuring system is based on our high-precision fiber optic measuring sensor which is capable of capturing and analyzing surface profiles through non-contact technology. Delivering results quickly – the fionec sensors work up to ten times faster than tactile measuring equipment – it complies with all required industry standards. On top of that, the miniaturized measuring probe can reach even the smallest cavities (thanks to probe diameters down to 0.1 mm).

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fionec
fiber optic sensor technologies

Technical Data

Surface Roughness Values

Surface roughness parametersper DIN EN ISO 4287	Ra, Rk, Rt, Rq, Rz, Rp, Rsk, Rku, RSm, Rc, Rpc
others	Rmax, Rlq, Rda, Rla, Rpmax, Rvmax
Bearing area curve and Rk parameters according to DIN EN ISO 13565	Rk, Rpk, Rvk, Rpkx, Rvkx, A1/2, Mr1/2, R1/2
Application of filters	compliant with DIN EN ISO 11562, 13565, 16610

Measuring System

Measurement principle	Low-coherence interferometry
Diameter of the measuring probe	≥ 80 µm
Working distance	from 0.02 mm (depending on the probe)
Inner diameter of the tested object	≥ 0.15 mm
Direction of measurement	angular (90°), axial (0°)
Measuring frequency	up to 8 kHz (depending on the surface)
Maximum travel	100 mm
Suitable materials and surfaces	Glass, metal, ceramics, plastic etc. – transparent, glossy, matt
Software	RMPControl / Fiometrics
Integrated interfaces	API / DLL
Power supply	100–240 V AC, 50/60 Hz

Optional Accessories

The standard version features a manual three-axis positioning unit and a manual three-jaw chuck.The following optional extras are also available: Pneumatic three-jaw chuck, assembly board for three-jaw chuck, engine-driven 2-axis positioning unit (x, y), equipment table with a passive or active vibration insulation system.

We develop tailor-made solutions for a wide range of applications and requirements. Feel free to contact us.

Applications

Your Advantages

Precision and Compliance with Industrial Standards

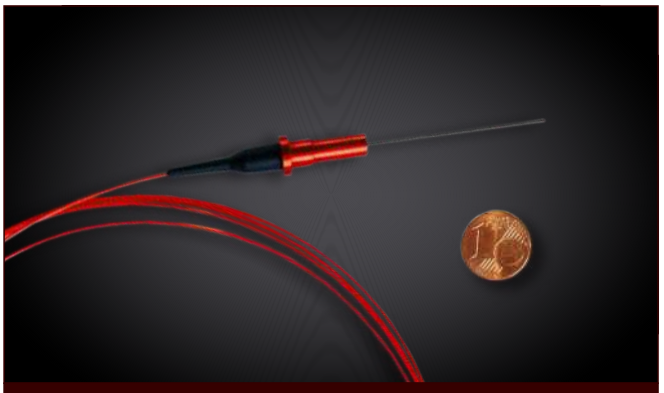
The fionec RMP surface roughness measuring station achieves measuring accuracies of less than 3 nm with resolutions of 0.1 nm. Automatic signal optimization allows our technology to generate consistent measurement values, even for heterogeneous surfaces. It delivers profile measurements that comply with the standards of DIN EN ISO.

Fast and Easy-to-Automate

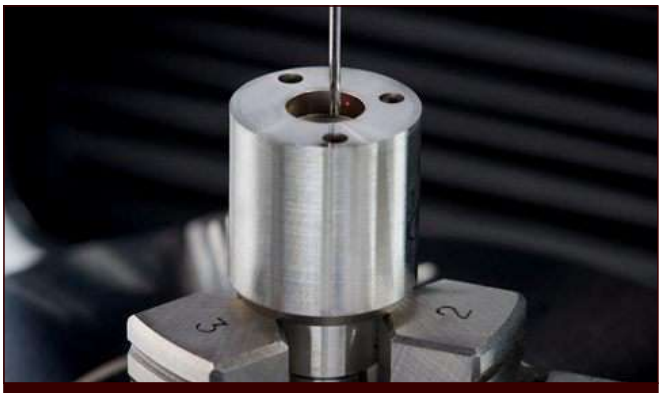
The RMP technology achieves measuring speeds of up to 5 mm/s, significantly more than tactile measuring instruments. High measuring frequencies of up to 8 kHz enable our customers to perform full inspections in an industrial environment – if needed at the speed of the production line.

Non-Contact and Flexible Technology

Our sensors use non-destructive testing technology and can measure virtually any surface. The linear axis of the surface roughness measuring system is adjustable, allowing both horizontal and vertical motions. Hardware and software interfaces enable automatic loading processes and enabling easy integration into automated production processes.



Measuring Probe



RMP Surface Roughness Measuring System

Over 15 Years of Sophisticated Fiber Optic Technology

fionec has been developing, manufacturing and marketing innovative fiber optic measuring systems and components since 2007. We provide a complete and integrated range of services, from the development of customized measuring concepts and algorithms, simulations and contract measurement projects to the construction, adaptation and distribution of fiber optic measuring probes and optical fibers.

Our sophisticated miniature measuring probes are unrivaled in the high-tech industry, allowing us to maintain the technological leadership in high-precision measurements of tight or hard-to-access spaces and of delicate surface structures. Flexible and modular systems architecture, freely adaptable configurations and integrated interfaces enable us to provide customized measuring systems. For sophisticated measuring tasks and reliable quality assurance in the precision and ultra-precision manufacturing sector.