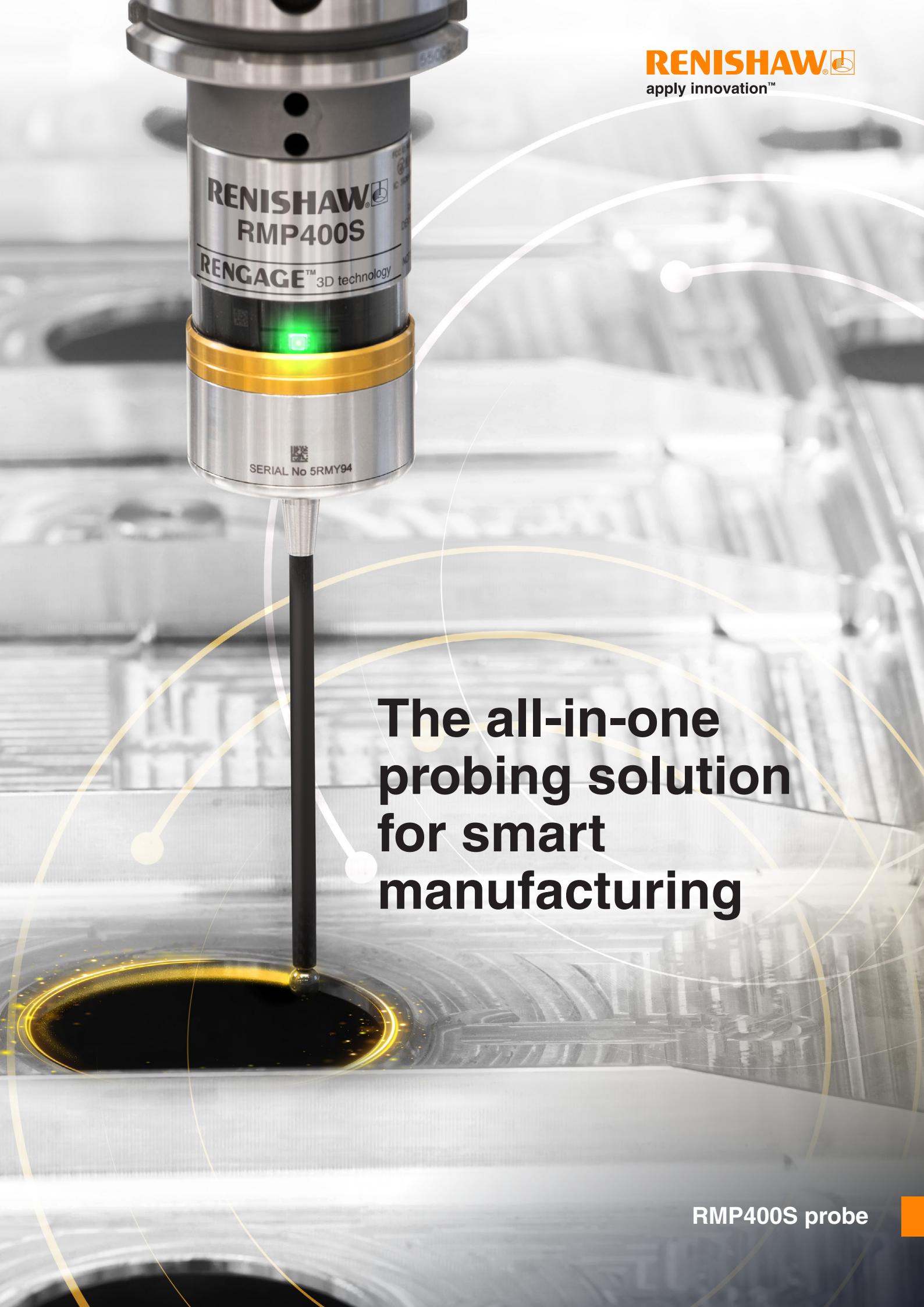
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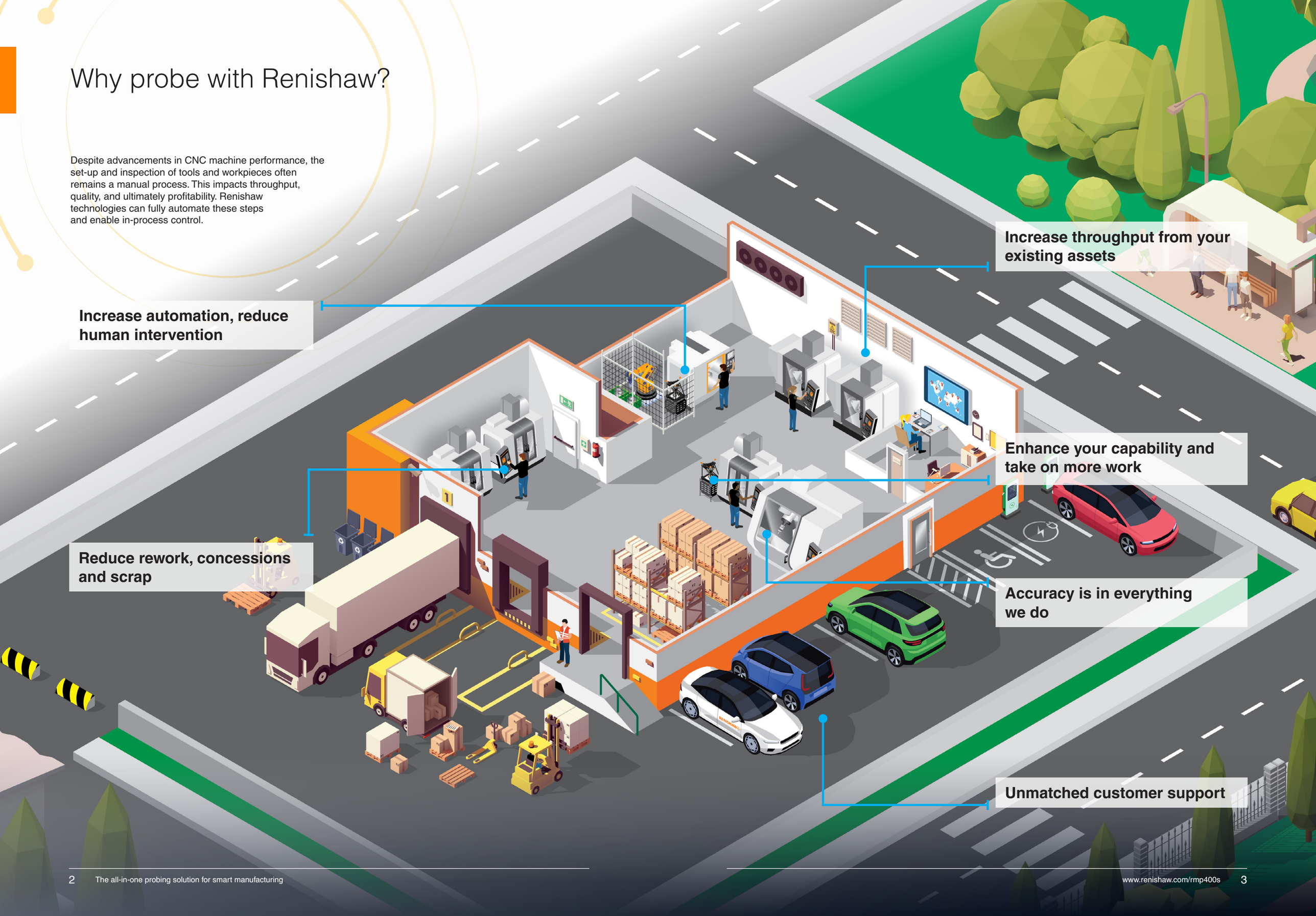


The all-in-one probing solution for smart manufacturing

RMP400S probe

Why probe with Renishaw?

Despite advancements in CNC machine performance, the set-up and inspection of tools and workpieces often remains a manual process. This impacts throughput, quality, and ultimately profitability. Renishaw technologies can fully automate these steps and enable in-process control.



An innovative flexible, multi-measurement probing solution

Take your probing to the next level

Touch-trigger probing has long been the standard for on-machine measurement, but modern manufacturing is increasingly demanding more. Tighter tolerances, complex geometries, and increasing automation are driving the need for deeper insight into measurements such as form and roughness, directly on the machine.

RMP400S expands what probing can do, enabling users to move seamlessly from touch-trigger measurement to advanced scanning capabilities. As quality expectations rise across manufacturing, greater insight and control are essential to delivering consistent, high-quality parts.

The RMP400S is supported by Renishaw's proven metrology expertise and programmed using world-leading macro software, Inspection Plus, removing the, removing the need for extensive G-code knowledge. The probe benefits from simple set up through an intuitive user interface.

Features and benefits

- Versatile – Renishaw's most adaptable on-machine probe to date. Users can effortlessly switch between single point touch-trigger measurement, continuous scanning, and surface finish verification for accurate and repeatable results every time.
- Increase throughput – Conduct touch-trigger measurements, scanning, and surface finish verification with a single probe, reducing cycle times and machine idle times compared to existing solutions.
- Ease of use – Compatible with Renishaw's intuitive probing software which enables easy set-up and operation without the need for complex programming.

The flexible multi-measurement probing solution



Touch-trigger measurement

The RMP400S offers exceptionally accurate probing with a repeatability of just 0.25 µm (10 µin) 2 σ using a 50 mm stylus. This makes it ideal for critical dimensional checks and reliable part alignment.



Scanning measurement

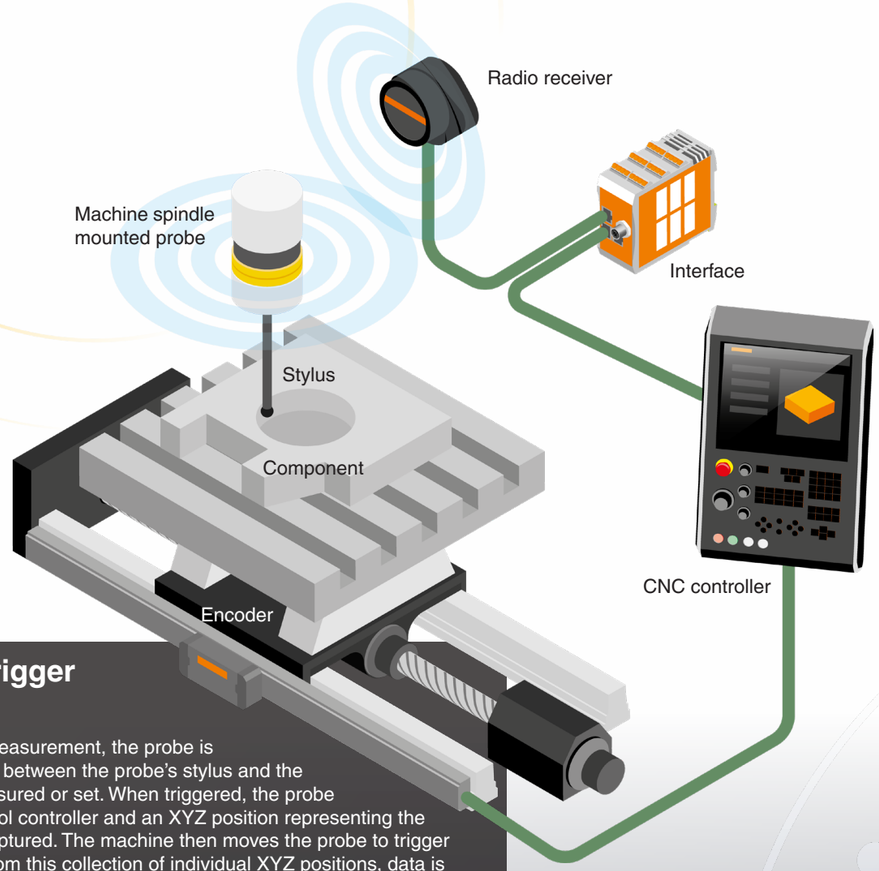
Unlock detailed form and surface finish insights with high-density scanning data. The RMP400S offers on-machine scanning capabilities that capture detailed form and surface finish verification, such as run-out, form, flatness, roughness, and waviness.



Surface finish verification

Gain crucial insights into part finish with on-machine surface roughness and waviness verification, seamlessly integrated into the scanning capability of the RMP400S. This means there is no need to switch to a different probe or stylus, heavily reducing cycle times.

How the RMP400S works



From touch-trigger to scanning

During touch-trigger measurement, the probe is triggered upon contact between the probe's stylus and the component being measured or set. When triggered, the probe signals the machine tool controller and an XYZ position representing the probe tip position is captured. The machine then moves the probe to trigger at the next location. From this collection of individual XYZ positions, data is interpolated to represent the shapes and features measured.

During scanning measurement, the probe remains in contact with the component, scanning a path across the surface and collecting a constant stream of data points. The volume of surface data captured during the scan provides detailed, highly accurate information of the component and individual features inspected.

Next-generation radio transmission

RMP400S joins our existing portfolio of radio probes, using the QE transmission protocol and communicating with the machine controller via the RMM-QE radio receiver. The QE-series operates on a 2.4 GHz hybrid frequency-hopping spread spectrum (FHSS) protocol, which complies with global radio regulations.

FHSS technology enables both the probe and interface to jump from channel-to-channel whilst maintaining communication. This allows our systems to work and co-exist alongside other probes, as well as other radio sources such as Wi-Fi, Bluetooth® and microwave ovens.

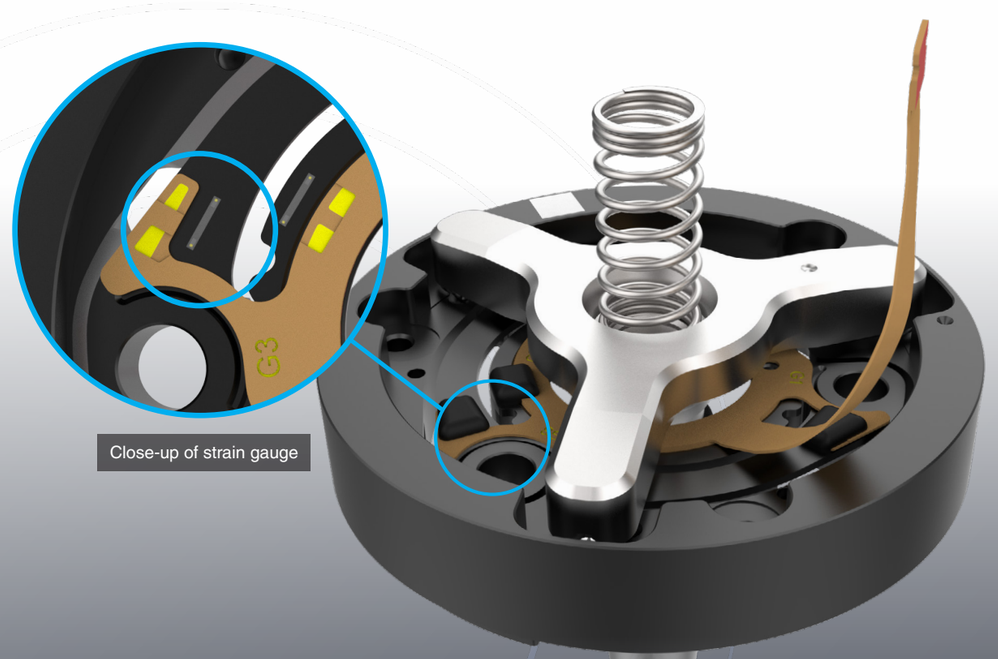
Technologies explained

RENGAGE™ technology

RENGAGE™ technology combines proven silicon strain gauge technology with ultra-compact electronics – allowing on-machine probing systems to achieve outstanding 3D measurement capability and sub-micron repeatability.

As the strain gauges are independent from the kinematic mechanism, probes with RENGAGE technology have an ultra-low trigger force. This provides exceptional measurement accuracy and eliminates the possibility of surface and form damage – ideal for inspecting delicate workpieces.

RMP400S probe design



Close-up of strain gauge

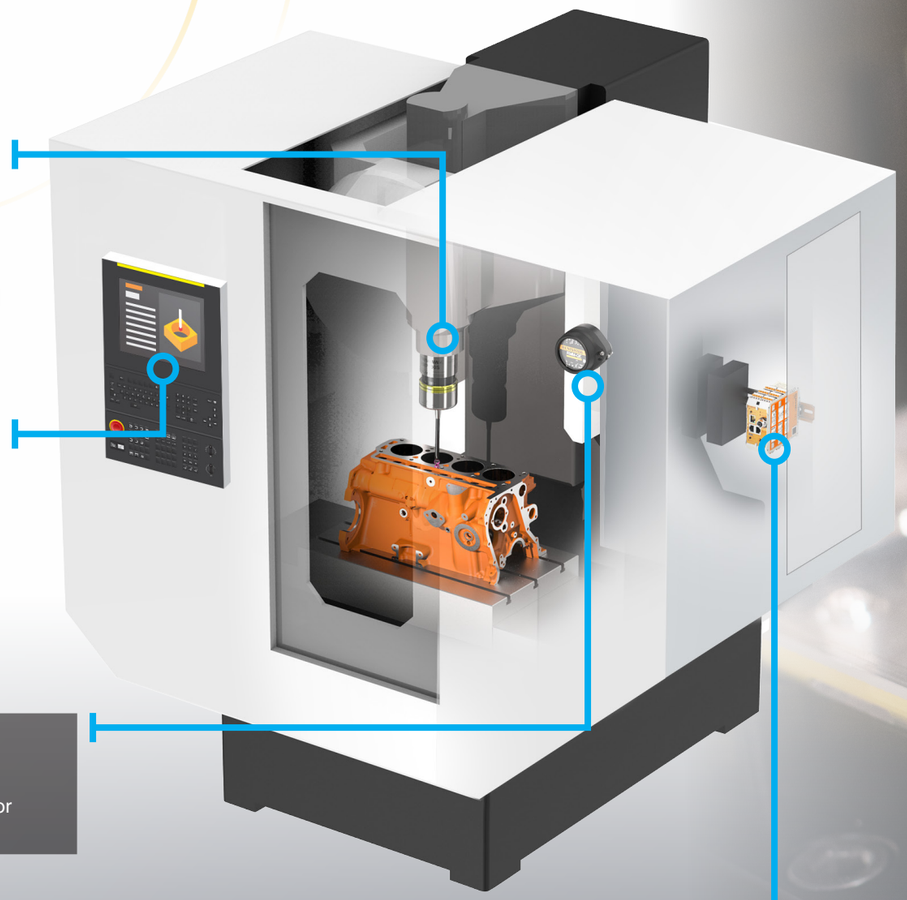
System components

RMP400S probe

A flexible, multi-measurement probe that integrates touch-trigger probing with advanced scanning capabilities and surface finish verification.

Software

Compatible with world-leading Inspection Plus software, which has been enhanced to include scanning and surface finish verification. It provides a wide range of probing cycles.



RMM-QE

Radio-based receiver that collects data from the probe and transmits to the Universal Sensor Interface (USI).

Universal Sensor Interface (USI)

An interface that processes signals from the RMM-QE receiver and transfers them to the CNC machine tool controller.

RMP400S specification		
Principal application		Workpiece inspection and job set-up on multi-tasking machines and machining centres.
Transmission type		Hybrid frequency-hopping spread spectrum (FHSS) radio
Interfaces and receivers		Universal Sensor Interface (USI) and RMM-QE
Unidirectional repeatability (touch-trigger mode)		0.25 µm 2 σ (50 mm stylus) / 0.35 µm 2 σ (100 mm stylus)
Stylus scan range (in XY)		±0.5 mm with 100 mm stylus
Scanning data collection rate		1000 points/second
Operating range		Up to 15 m (49.2 ft)
Battery life	**Standby life**	37 months maximum
	Continuous use	230 hours (touch-trigger mode) 100 hours (scanning mode)

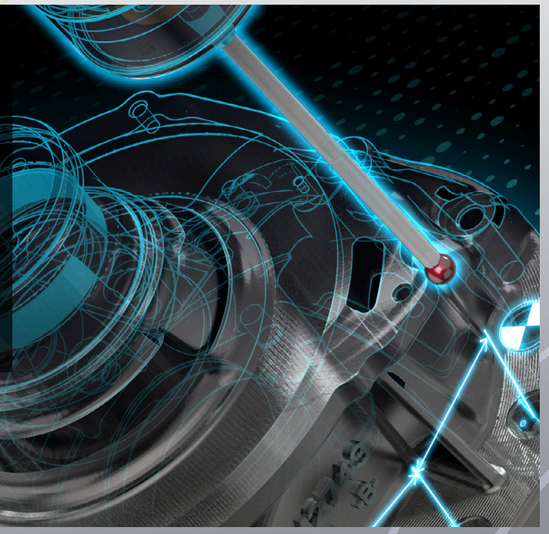
Powerful probing software

Our comprehensive range of macro, PC, and smartphone software solutions ensures that the RMP400S probe is easy to configure, use, and maintain.

Inspection Plus for USI

Inspection Plus – the industry-standard macro package for machine tools has been enhanced to include measurement cycles for the RMP400S probe. Compatible with leading machine tool controller platforms, this machine-resident package is simple to program and offers solutions for part setting, inspection and in-process measurement.

Dedicated scanning cycles have been added to allow high-density data collection compared to standard touch-trigger probing. In addition, specific cycles for surface finish verification have also been added to enable roughness and waviness measurement.



Probe Setup app

The Probe Setup app helps manufacturers easily customise their Renishaw probe settings. Opti-Logic™ technology uses pulses of light to send and receive probe settings from a smartphone to a machine tool probe, simplifying the configuration process.

Download on the App Store

GET IT ON Google Play



Set and Inspect

The next generation of Set and Inspect enhances our user-friendly on-machine probing application, designed for machine tool operators who need a straightforward probing solution. The app enables operators to easily create probing and tool-setting routines.

Set and Inspect simplifies the process further by automatically uploading probing routines to the CNC controller. It also integrates reporting capabilities, allowing quick and easy access to measurement data and production trends. Users can view both live and historical measurement results, as well as non-contact tool setting macro routines.

The app can be installed directly on the CNC controller or on a tablet connected to the controller via Ethernet.



Renishaw Central

Renishaw Central is a smart manufacturing data platform that collects and presents process and metrology data from the shop floor. It connects to measurement devices across the manufacturing process and provides invaluable insights. Manufacturers can use these insights to analyse, identify, predict, and correct process errors before they occur.



The Productive Process Pyramid™

Tackle process variation at source, and reap the rewards

The higher the degree of human involvement in the manufacturing process, the higher the risk of error. Automated in-process measurement using Renishaw probes can help eliminate the risk. Renishaw probes facilitate the following controls for enhanced management of production processes, leading to an increase in profits.

For further details regarding the benefits of all levels of process control within the Productive Process Pyramid™, visit **www.renishaw.com/processcontrol.**

Post-process monitoring

Analyse and report on measurement data obtained.

- Determine surface finish verification.
- Rapid, traceable reporting of part conformance to specification.
- Reduce off-machine inspection time and costs.



In-process control

Automated, on-machine component verification.

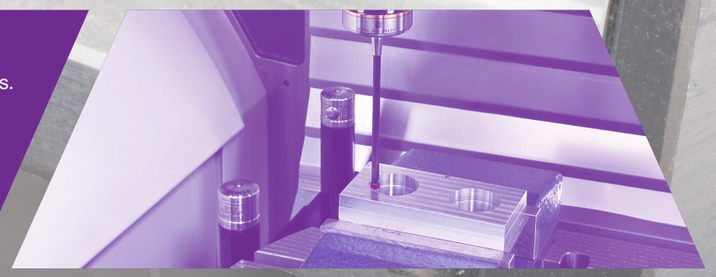
- Compensate for environmental and machine conditions.
- Implement adaptive machining processes.
- Reduce non-productive time and scrap.



Process setting

Automated on-machine part setting eliminates costly fixtures and manual setting operations.

- Automatically update machine offsets for accurate positioning and alignment.
- Introduce new processes quickly and respond to new customer needs.
- Faster set-up, improved quality, and reduced scrap.



Process foundation

Determine machine capability before manufacturing.

- Benchmark machine performance.
- Schedule in-cycle checks as part of the production process.
- Reduce machine downtime.

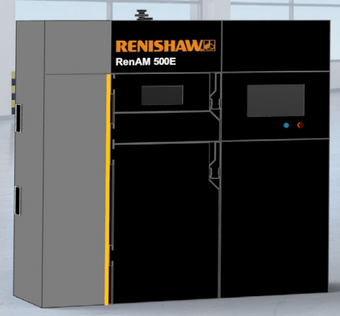


Renishaw's manufacturing solutions

Renishaw produces metrology and manufacturing equipment used in machine shops around the world.

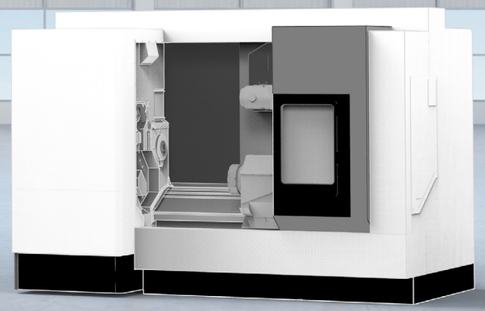
We develop systems for manufacturers and users of CNC machine tools that are designed to maximise machine performance. Automating the set-up and process control activities ensures high-quality, highly productive manufacturing, across all industrial sectors.

Our experience, flexibility, knowledge and close working relationships with machine tool builders ensures that our latest – and even custom-designed – technologies are easily integrated into new machine designs. These technologies can also be used during the manufacturing and commissioning of new machine tools to make machines the best they can be.













Metal 3D printing

www.renishaw.com/am



Machine tool probes for component setting and inspection

www.renishaw.com/machinetoolprobes



3D touch-trigger tool setters and broken tool detection

www.renishaw.com/tool-setting



High-accuracy laser tool setting systems

www.renishaw.com/nc4



Tool setting arms for lathes and grinding machines

www.renishaw.com/tool-setting-arm



Machine calibration and optimisation

www.renishaw.com/calibration



Encoders for position and motion control

www.renishaw.com/encoders



CMM inspection machines

www.renishaw.com/agility



Multi-sensor 5-axis measurement system

www.renishaw.com/revo



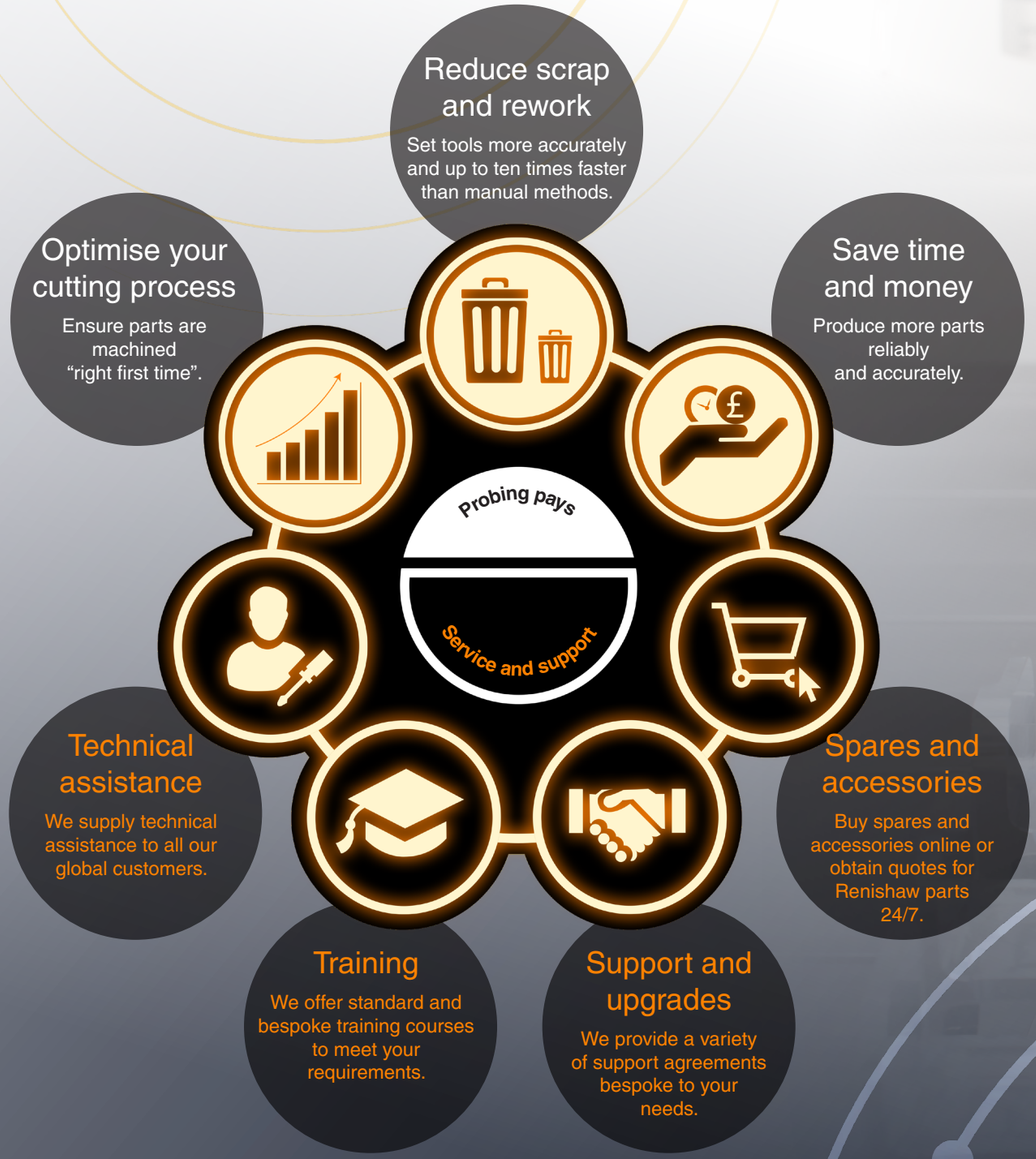
Shop floor gauging

www.renishaw.com/equator



The Renishaw advantage

At Renishaw, we have an excellent reputation for delivering strong support to our customers through a global network of service and support offices.





"The RMP400S probe reflects Renishaw's commitment to continuous innovation. It's designed to match modern machine capability, and delivers true multi-purpose performance. The RMP400S brings together touch-trigger measurement, scanning and surface finish verification in a single probe, helping manufacturers get more value from one machine."

Brandon Golab, Machine Tool Product Manager (Renishaw Inc)

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Applying innovation since 1973

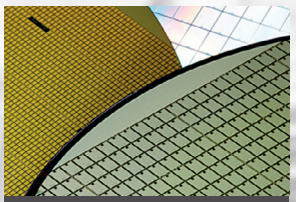
Renishaw is one of the world's leading engineering and scientific technology companies, with expertise in precision measurement and healthcare.

Our worldwide network of subsidiary companies and distributors provides dedicated global customer support, wherever you are.

Our principal markets include:


Aerospace


Automotive


Electronics


Energy


Heavy industry


Medical and healthcare


Precision manufacturing


Scientific

www.renishaw.com/rmp400s

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