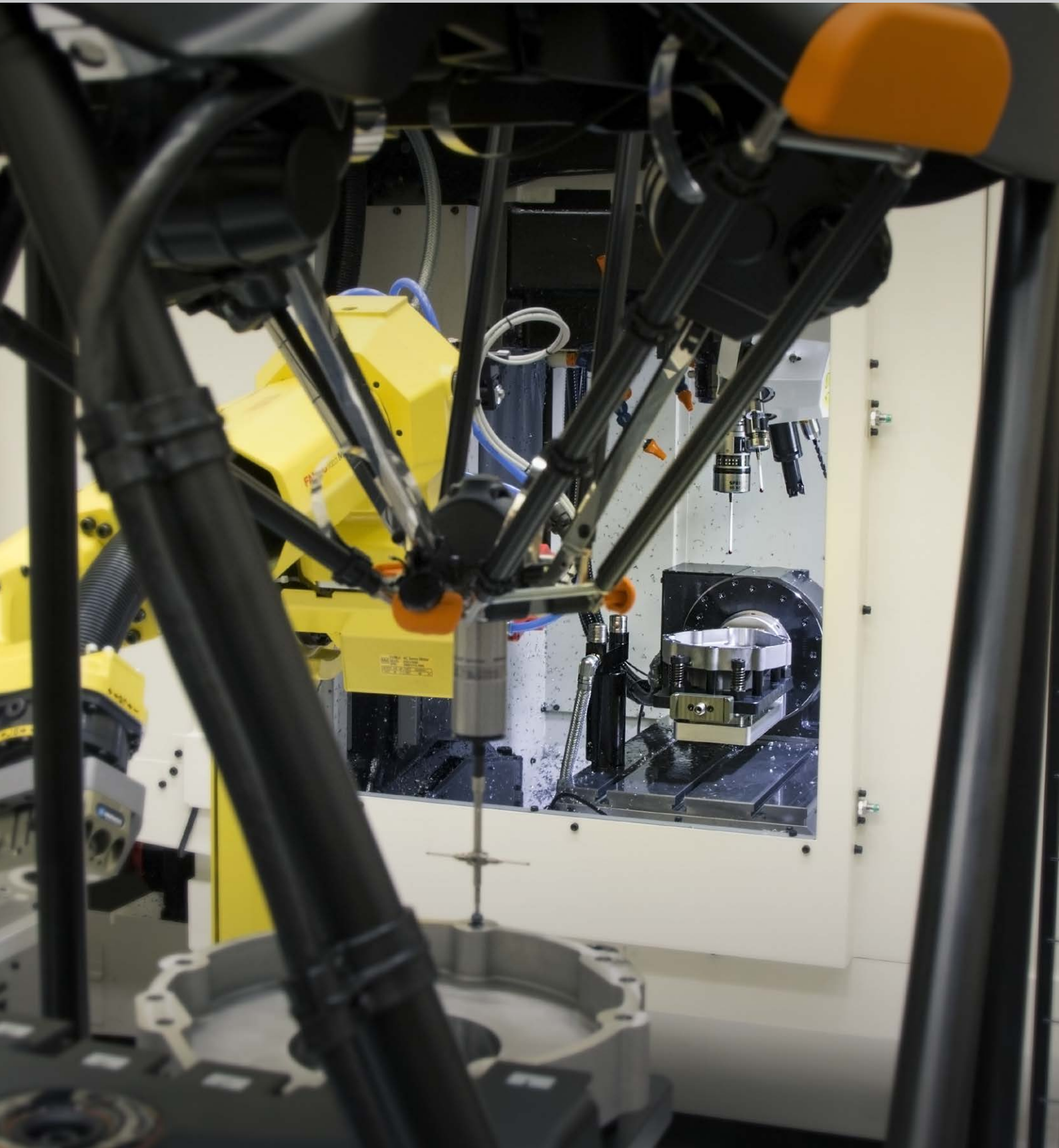


Renishaw technologies for precision CNC manufacturing



Intelligent manufacturing through process control

Regular machine testing with QC20-W ballbar system

- Ensures accuracy of interpolated features.
- Maintains cosmetic surface finish standards.
- Used within a preventative maintenance regime.



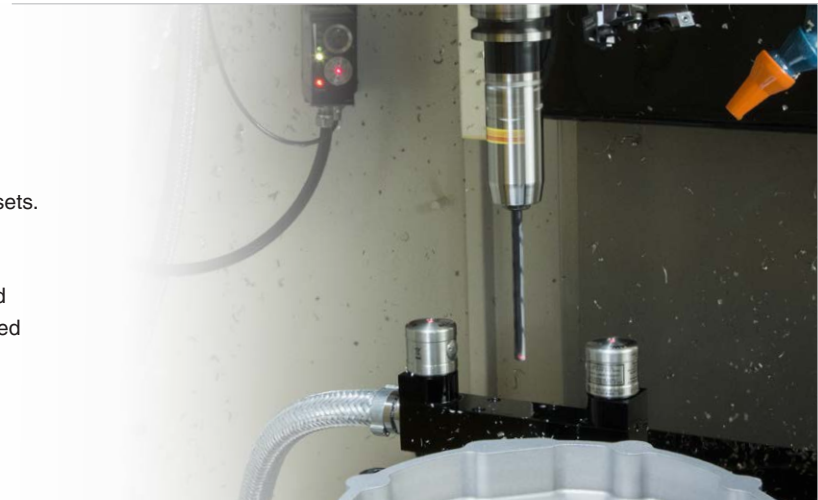
Precision machining of automotive parts

Many industries use casting or similar primary processes for generating near-net shape parts. However, critical features will still require precision final CNC machining. Renishaw technology delivers consistent product quality with reduced workforce skills, and enables factory automation to minimise manufacturing costs.



On-machine tool setting and checking with NC4 non-contact system

- Measures tool length and diameter offsets.
- Confirms expected tool assembly.
- Controls accuracy of drilled and tapped features or difficult to measure machined features.
- Identifies broken tools quickly and automatically.



SPRINT™ on-machine contact scanning system

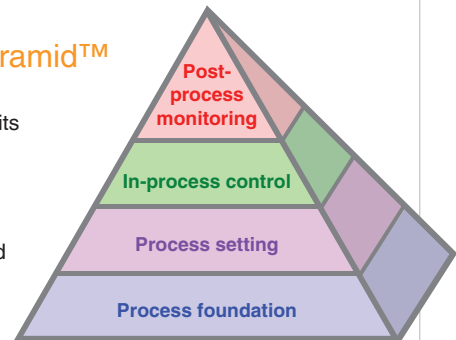
- Checks and sets critical machine alignments and fourth axis positions.
- Sets reference position for fixturing system.
- Compensates for thermal growth in the machine and workpieces.





Productive Process Pyramid™

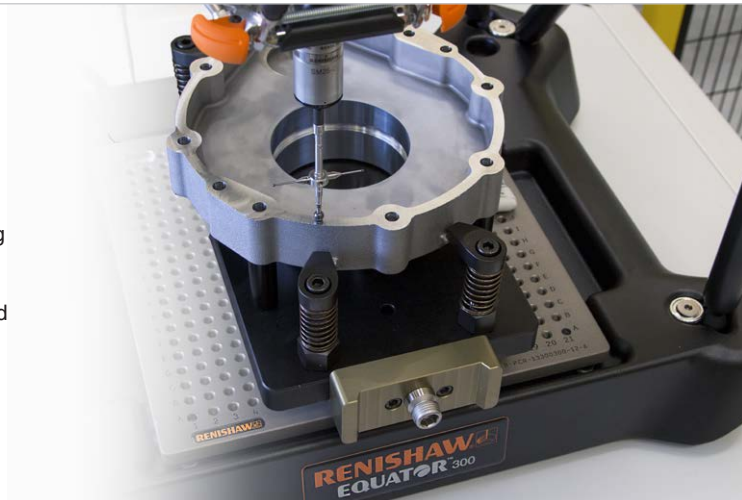
This manufacturing process benefits from applying the process control framework outlined by Renishaw's Productive Process Pyramid. Sources of variation are eliminated or controlled to ensure high levels of productivity and capability.



www.renishaw.com/processcontrol

Equator™ gauging system measures parts close to the point of manufacture

- Automatically sets workpiece. Replicated fixturing system allows off-machine part setting with zero added cycle time.
- Automatically updates tool offsets for machined features based on measured process trends.
- Dimensional integrity of the parts verified between machining operations.



PH20 5-axis touch-trigger system

- Provides traceable measurement.
- Assures that final parts meet design intent.
- Enables accreditation and sign-off.



About Renishaw

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. Since its formation in 1973, the company has supplied leading-edge products that increase process productivity, improve product quality and deliver cost-effective automation solutions.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include:

- Additive manufacturing and vacuum casting technologies for design, prototyping, and production applications
- Dental CAD/CAM scanning systems and supply of dental structures
- Encoder systems for high-accuracy linear, angle and rotary position feedback
- Fixturing for CMMs (co-ordinate measuring machines) and gauging systems
- Gauging systems for comparative measurement of machined parts
- High-speed laser measurement and surveying systems for use in extreme environments
- Laser and ballbar systems for performance measurement and calibration of machines
- Medical devices for neurosurgical applications
- Probe systems and software for job set-up, tool setting and inspection on CNC machine tools
- Raman spectroscopy systems for non-destructive material analysis
- Sensor systems and software for measurement on CMMs
- Styli for CMM and machine tool probe applications

For worldwide contact details, visit www.renishaw.com/contact



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