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SupaScan

Application overview

SupaScan provides an exceptionally fast workpiece set-up solution for users of machine tool spindle probes; ideal for manufacturers in high-volume production environments.

Using existing probing hardware – including the OSP60 with SPRINT™ technology – and the new DPU-1 data processing unit, the system is programmed using CNC macro calls to execute workpiece set-up routines without the need for additional programming or on-machine software.

When compared with traditional, touch-trigger probing solutions, the system offers significant reductions in part set-up time, thereby increasing time available for productive machining tasks. This cycle time advantage makes SupaScan a highly-attractive option for users in a diverse range of manufacturing industries.

In addition to simplified software requirements, SupaScan also requires fewer specialist CNC options when compared with other machine tool scanning systems.

Cycle time savings realised by the system are achieved through a combination of taking measurements during continuous machine motion – at up to G0 (rapid) feedrates – and the elimination of the start/stop motion and probe path adjustment required for traditional spindle probe measurement techniques.

Measurement results returned can be used for quality assurance purposes, or used to update machine properties such as a work co-ordinate system (WCS).

The system also has the capability to perform 'raw data capture' in order to determine highpoint and lowpoint values across a plane, and to support touch-trigger measurement, allowing existing measurement and inspection programs to be used for in-process control tasks.

SupaScan is one of a range of industry focused applications developed by Renishaw for use with the OSP60 probe and SPRINT™ technology. For more information on these applications, see **www.renishaw.com/sprint**.

Target industries and applications

Industries

The system provides game-changing performance and capability in high-volume, serial manufacturing – industries where cycle time is critical – and precision manufacturing applications that require accurate and consistently repeatable, workpiece set-up using spindle probing hardware.

Applications

SupaScan is designed for scanning known parts, returning material condition, positional offset, angular offset and feature form information which can then be used to set or update a work co-ordinate system (WCS) prior to machining.

Additionally, raw data point information returned to the data processor and saved as a .csv file can be analysed and used to perform basic levelling and component alignment.

Benefits

The principal benefits of SupaScan are:

• Significant part setting cycle time reductions: testing with typical industrial components has seen reductions of over 70%.

• Controller specific programming and probe calibration macros.

• Results are stored to machine variables – allowing machine properties such as a work co-ordinate system (WCS) to be updated – and can be exported to external systems for quality assurance purposes.

Technology overview

The most significant aspect of SupaScan is its speed and the resulting reductions in component set-up time that it can deliver. This is made possible through a number of key differences between SupaScan and other spindle probe systems.

Line scan measurement moves are performed as fast as G0 (rapid) feed, allowing set-up moves to be performed as fast as it is physically possible for the probe to traverse the surfaces of the component. This, coupled with the elimination of the start/stop motion required as part of traditional, touch-trigger, probe cycles, further reduces component set-up time.

This is especially advantageous in high-throughput, serial manufacturing industries where even small reductions in measurement and inspection cycle times can provide significant cost savings and increase available machining time.

Data analysis is performed by the DPU-1 data processing unit, allowing the system to run quickly and smoothly, eliminating data processing overheads experienced when analysis is performed on the machine tool control.

Traditional, touch-trigger probe path

SupaScan probe path
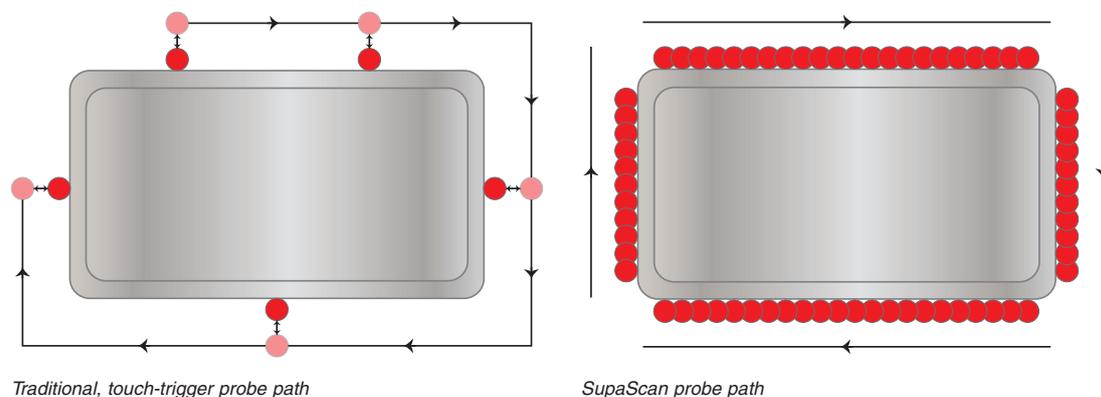
Productive Process Pyramid™

Process variation is the enemy of competitiveness and profitability. It causes waste and inefficiency, leads to high quality costs and manning levels, and results in late deliveries and poor traceability.

Renishaw's Productive Process Pyramid™ provides a framework within which to identify and control variation in your factory, backed by innovative technology, proven methods and expert support.

The Productive Process Pyramid shows how layers of control can build upon one another to systematically remove variation from the machining process, increasing throughput, maximising conformance and eliminating human error.

SupaScan addresses issues relating to the middle two layers of the Productive Process Pyramid.

- Within the **predictive** layer, the application can be used for workpiece set-up and work co-ordinate system update tasks.
- Within the **in-process** control layer, the application's touch-trigger capability means that it can be used with existing probe routines for in-process measurement and inspection of components. Material condition results from these cycles can then be used to update tool diameters and wear offsets, and to track thermal drift during a machining process.
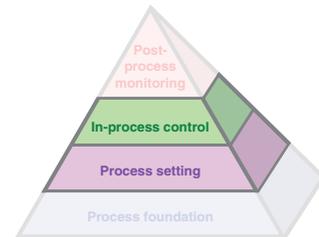
Requirements and compatibility

Requirements

To use SupaScan you need:

- A probing hardware installation (OSP60 probe, OSI-S system interface, OMM-S system receiver) on the CNC machine tool.
- A correctly configured DPU-1 data processing unit and the resulting suite of programming and probe calibration macros for the make and model of your machine tool control.

Compatibility

SupaScan is currently compatible with Fanuc Series 0-3x*i* and Siemens 840D controls.

Certain controller options are also required in order to use this application.

For more information on these options, refer to the range of controller requirements documents available from Renishaw at **www.renishaw.com/sprint**.

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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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