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RENISHAW
apply innovation™

Productivity+™ - PC based probing software for machining centres

Productivity+™ version 1.90

Productivity+™, Renishaw's PC based software solution for integrating process control into machining programs, delivers further enhancements and additional capability in the latest, version 1.90 release.

The software now includes full multi-axis support for vertical and horizontal machining centres, including machine configurations with axes which modify the spindle orientation.

Support for machine specific multi-axis functionality has also been extended and now offers compatibility with the Heidenhain PLANE function in addition to Fanuc G68.2 (Tilted Working Plane) and Siemens CYCLE800. These functions greatly simplify multi-axis programming, eliminating the requirement to generate multiple work coordinate systems within the software.

Productivity+ is now able to report the Material Condition of Measured Circles and Measured Planes in addition to existing reporting capability for Measured Points. Material Condition, the error in the probing direction between expected and actual values, can be used as an indication of machining accuracy, and proves particularly useful for determining the machined condition of angled planes. Reported values can also be used in conjunction with tool update operations, within logic conditions and to program adaptive machining.

Custom macros, the programming method which allows the creation and addition of bespoke solutions into Productivity+ probing routines, can now be programmed with references to multiple probes and work coordinate systems. When posted, these macros are then able to report information and values related to these elements which can be saved to a machine variable, extracted as a parameter for use in further programs, or used in subsequent logic conditions.

Support for multi-axis machine tool configurations, including those that modify spindle orientation

Key benefits of Productivity+™

In-process measurement

Productivity+ lets users combine probing and machining elements into a single integrated cycle, allowing features to be checked automatically without the need for an external PC. Logic statements enable the machine tool to make intelligent decisions on how to proceed without operator intervention.

Integrated workflow

Programming from a solid model increases programming speed and eliminates the requirement for specialist machine knowledge. Those programming without solid models can also take advantage of Productivity+ functionality.

Automatic machine updates

The integrated logic builder allows measurements to be used to set work coordinates, update tool length and/or diameter, machine variables and rotation updates automatically.

Innovations in version 1.90

Full multi-axis support

Full multi-axis support for Fanuc, Siemens and Heidenhain controllers including machine specific multi-axis functions, and the ability to generate multi-axis programs for all multi-axis milling machines.

Material Condition

Report on the stock condition of measured features and use the outcome to simplify the programming of logic conditions and as an input for adaptive, in-process control operations.

Extension of custom macro capability

Determine probe definition data plus angular and positional values of programmed work coordinate systems for use in logic statements and additional programs.

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Key features

Sophisticated part set-ups and operations
Integrated logic builder adds intelligence to machining programs with measurement results being used to determine process flow.

Point and click programming
Simple to use, icon based software.
Individual view windows for solid model, probe program, G-code and probing statement.
Program using solid model features, or using Basic Statements where no model exists.
Cceate 'virtual' features from existing measurement data using Constructed Features.

Multi-axis capability
Program for 3-, 4- and 5-axis milling machine configurations, including Heidenhain PLANE, Siemens CYCLE800 and Fanuc G68.2 commands.

CAD/CAM compatibility
Integrates easily into existing programs and processes.
Import a variety of CAD model formats.
Import G-code, then split/re-combine as necessary around the probe routines.

Integrate tool setting and probe routines into existing G-code
Determine and update length, radius and/or diameter of cutting tools mid-program for maximum machining accuracy.
Select where to add probing and machine or tool updates to existing machining programs.

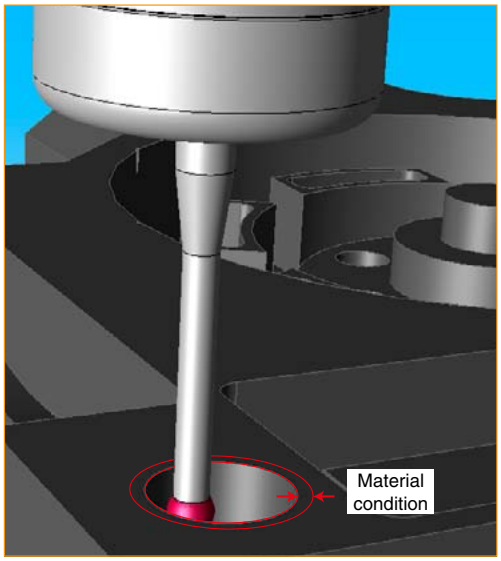
Integrated dialogs and wizards
Dialog boxes provide step-by-step instructions.
Extensive on-line Help plus sample tutorials.
Post Processor tool transforms probe routines into machine readable G-code.

Program simulation
Perform program 'prove-out' before loading to the machine controller to eliminate the risk of damage to machine and probe.
Visual identification of current program position.
Support of multiple probes during simulation.

'Material Condition'
Determine the error in the probing direction between expected and actual values.

Probe database
Record of available probes including full stylus configuration and carousel location.
Select standard Renishaw probes or define individual parameters to create 'custom' probes.

NC updates
WCS (G54, G55 ...); Rotation; Tool length and diameter; Macro variables.



Material Condition for a measured circle feature is the error in radial measurement

Multi-axis component inspection on 'nodding head' style machine tool

More information

Details of Renishaw's software solutions for machine tools and a comprehensive list of supported CAD formats can be found at **www.renishaw.com/mtpsoftware**

For worldwide contact details please visit our main website at www.renishaw.com/contact

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