

Productivity+™ Adaptive Cut Toolkit

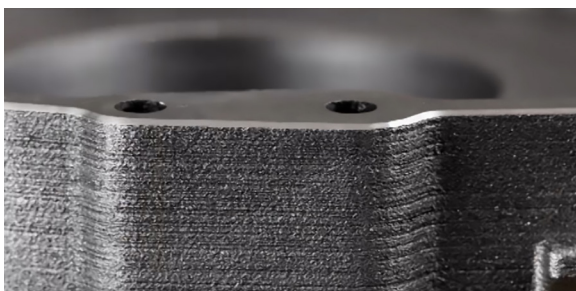
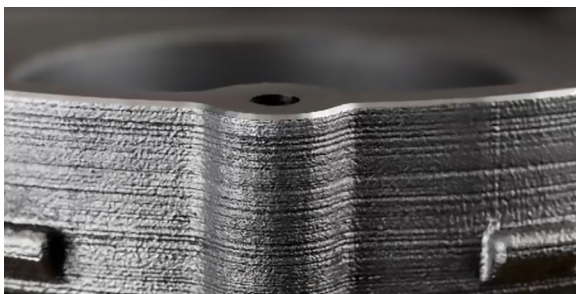
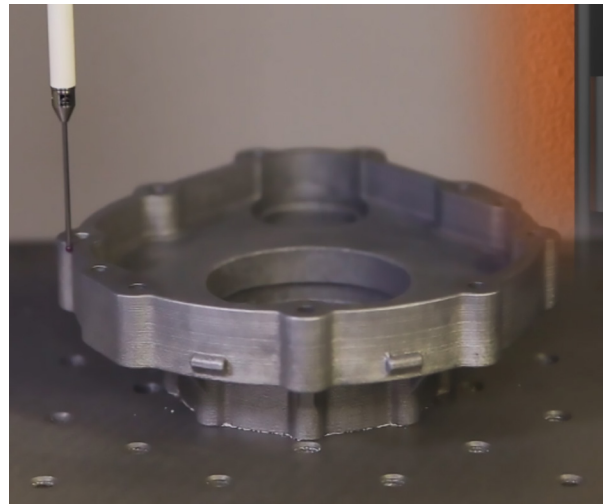
Toolkit overview

The Productivity+™ Adaptive Cut Toolkit offers machinists the ability to adaptively cut parts quickly and accurately. It enables applications like automated chamfering on near-net shape parts without the use of external tools, such as robots, or third-party software. This CNC-based solution can provide a reliable, automated and cost-effective answer to many of the challenges associated with traditional methods.

Accurate adaptive machining requires a large amount of measurement data, so touch-trigger based solutions are often too slow for all but the most high-value parts. High-speed on-machine scanning (up to F15000) using the Renishaw OSP60 probe with SPRINT™ technology measuring 1000 points per second allows quick and detailed understanding of the real form of the part, which in turn can be used to rapidly generate a new cutting path based on the actual shape.

The Adaptive Cut Toolkit draws on the powerful 3D scanning capability of the OSP60 SPRINT™ technology probe and the Productivity+™ Freeform Surface Toolkit to measure the true surface shape, followed by point-by-point toolpath adjustment in real-time, to ensure that each cutting program is tailored precisely for the individual scanned part. It comes with straightforward, point-and-click programming together with robust, fail-safe runtime automation.

The tools can be used in a range of applications including edge breaking, deburring, copy cutting of mating parts, and surface engraving. The Adaptive Cut Toolkit brings high-end adaptive machining capability to your fingertips at a fraction of the cost of some traditional methods.



The Productivity+™ Adaptive Cut Toolkit is one of a range of industry focused applications developed by Renishaw for use with the OSP60 scanning probe. For more information on these applications, see www.renishaw.com/sprint.

Benefits

The principal benefits of the Productivity+ Adaptive Cut Toolkit are:

- Adapt nominal cutter paths in real-time, based on actual 3D surface shape
- Accurately and quickly cut chamfers on-machine without the use of robots or third party software
- Rapid measurement and data processing
- Automated and fail-safe

Technology overview

The Productivity+ Adaptive Cut Toolkit is an optional add-on to the Productivity+ Freeform Surface Toolkit.

The Freeform Surface Toolkit provides fast and accurate measurement of free-form and complex 3D surfaces.

Collecting 1000 data points per second at feedrates up to F15000, the user can quickly determine the true shape of the part against nominal.

The Adaptive Cut Toolkit uses the point data from the Freeform Surface Toolkit output together with the nominal cutter path based on a model of the part to carry out point-by-point toolpath adjustment in real-time.

Full 3D support

The system is designed to deal with complex geometry and tight curvature parts.

Automated and fail-safe

No operator intervention required, with configurable error recovery.

Very fast scanning

Controller integration provides real-time encoder feedback over a dedicated API, meaning the system measures accurately even in roughing mode.

Full control

Configure new processes using intuitive software tools without the need for third party solutions.

Rapid data processing

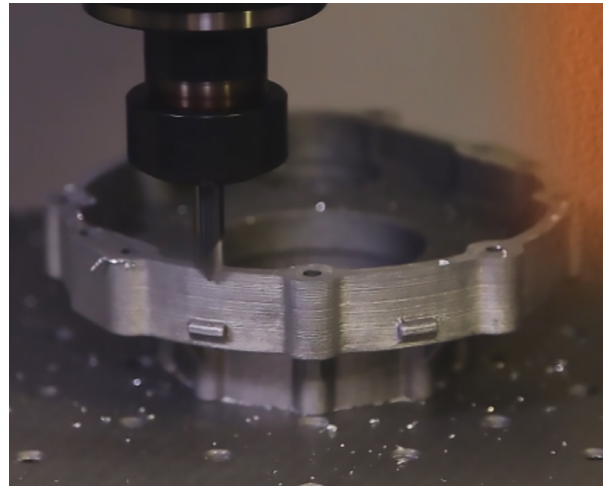
Highly optimised software runs asynchronously so that the cutting program is typically ready to execute even before the cutting tool is loaded.

Ultimate efficiency

Use a machine variable to create uniquely identified program names. This means multiple parts can be scanned before any cutting is done, providing even greater efficiency.

Built-in offsetting (optional)

Toolpath offsetting that is more accurate than the controller's cutter compensation (because it is based on known surface normals), and does not require a lead-on move in order to be applied.



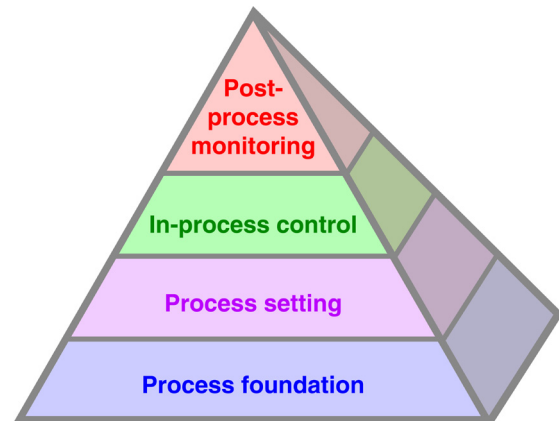
Productive Process Pyramid™

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.

The Productivity+ Adaptive Cut Toolkit provides significant benefits in the in-process control layer of the Productive Process Pyramid.



- Within the **active layer**, the Adaptive Cut Toolkit can be used to ensure that cutting processes are controlled precisely and quickly and ensure that parts are right first time.

Requirements and compatibility

Requirements

To use the Productivity+ Adaptive Cut Toolkit you need:

- A scanning system hardware installation (OSP60 probe, OSI-S interface, OMM-S receiver) on the CNC machine tool.
- On-machine software: Productivity+™ CNC plug-in and Productivity+™ Scanning Toolkits Processor.
- PC-based program generation software: Productivity+™ Active Editor Pro, Productivity+™ Active Editor Pro: SPRINT™ option and Productivity+™ Scanning Toolkits Editor.

Optional:

- An external data processor (DPU-2): dependent on CNC controller type.

Compatibility

The Productivity+ Adaptive Cut Toolkit is compatible with 5-axis milling machines with a table/table configuration fitted with a compatible controller.

Certain controller options are also required in order to use the Productivity+ system. For more information on these options, refer to the range of Productivity+ Scanning Suite controller requirements documents available from Renishaw at www.renishaw.com/sprint.

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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H - 5465 - 8343 - 01

Part no.: H-5465-8343-01-A
Issued: 09.2020