

## Renishaw Co-ordinate Measuring Machines Product Division

### Product bulletin number: PBC-02697

<b>Title:</b>	MODUS Planning Suite 1.1 Release		
<b>Product:</b>	MODUS Planning Suite	<b>Issue Date:</b>	13/08/2020
	<b>Name:</b>	<b>Signature:</b>	
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<b>Confidentiality:</b>	<b>Open</b>	<b>Type:</b>	Product Information
<b>Summary:</b>			
<p>This bulletin is to advise that MODUS Planning Suite version 1.1 has now been released. It contains an overview of the functionality and operational changes since MODUS Planning Suite version 1.0. Full details can be found in the software release notes.</p>			
<b>Distribution – Select at least one</b>			
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MODUS Planning Suite is designed for use in conjunction with MODUS 1.9 or later and simplifies the creation of DMIS code for curve and surface measurement.

The application has a range of tools to ensure a collision free path can be achieved and uses optimised motion.

### Functionality

The MODUS Planning Suite is modular, meaning that only the functionality required needs to be purchased, not the whole product. There are now three separately purchasable modules:

1. Blade: this is a new addition to the MODUS Planning Suite
2. Patch: this module is unchanged from the previous release.
3. Curve: the previous “Curve” option has been expanded to include “RSP2 Curve” and “RSP3 Curve”. Both curve options run under the curve licence.



Figure 1 – Home screen module tiles

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# 1. “Blade” module

Previously, the options available in this module were provided in the APEXBlade product. Including these measurement options with additional MODUS Planning Suite technology improves the functions further.

## 1.1 “Blade” measurement

- Full blade inspection with sweep scans being planned on concave, convex, leading and trailing edge surfaces.
- Settings and method options provide the user with ways to customise the measurement paths. This includes the ability to control the number of sweeps per surface and changing the direction of measurements between longitudinal or transverse sweeps.
- Adaptive Edge Scan (AES) is a measurement operation on the leading or trailing edge prior to sweep scans. This is used to adapt the position and probe orientations of the edge sweep so that the sweep scan runs smoothly.

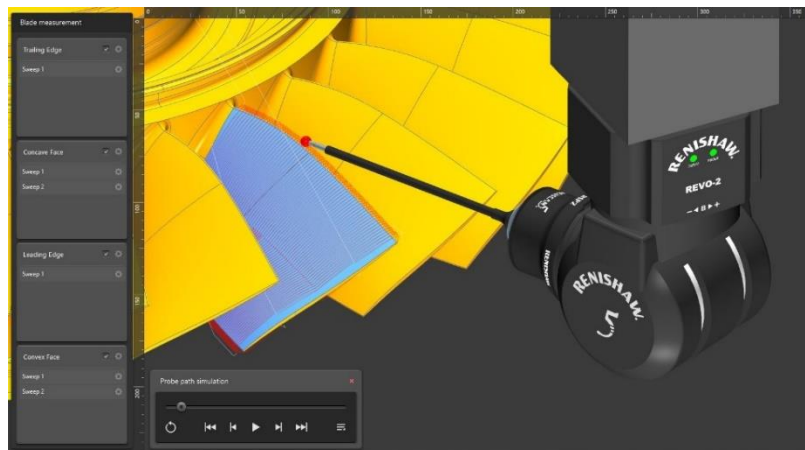


Figure 2 – Blade measurement simulation

## 1.2 “Section” measurement

- Sweep scans over sections (with the option of joined sweeps) – High density sweep scans cover the sections where airfoil data is collected, whilst low density sweep scans occur between the sections where no data is collected. This method also reduces the number of approach and retract moves, reducing cycle time.

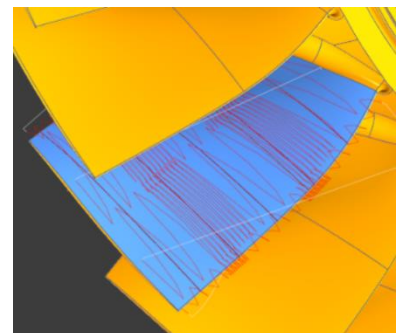


Figure 3 – Joined sweep scans on sections

- Section curve scan on faces – Section curve scans are created on the concave and convex faces, and full sweep scans are created on the leading and trailing edges.

MODUS Planning Suite generates the required DMIS to measure the Airfoil surface. MODUS 1.9 can then execute this DMIS and allow the user to perform airfoil analysis of sections.

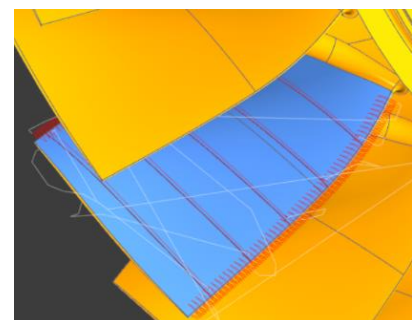


Figure 4 – Curve scans on sections

### 1.3 “Patch” measurement

This provides the ability to completely plan the blade and surrounding surfaces in one module to:

- Create a patch from an outline of points (Area)
- Select a patch from selected faces (Face)
- Create a patch from points on a centreline
- Create a patch from CAD edges

All of the selection methods that are available in the separately purchasable “Patch” module are included within the “Blade” module.

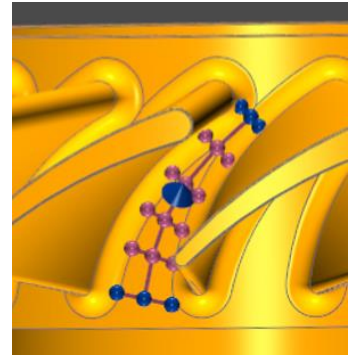


Figure 5 – Centre line patch

## 2. “Patch” module

This module is unchanged from the previous release

## 3. “Curve” module

### 3.1 Options for “RSP3 Curve” measurement

The curve planning option is being expanded in this release to include RSP3 curves. This RSP3 capability allows increasingly complex geometry on components to be measured using different probe assemblies.

#### Create a curve on CAD Edges

- Curves are defined by either selecting edges of the CAD model or edges of a slice created using MODUS 1.X.
- The planner uses the settings to create collision free paths.
- The required calibration angles are output alongside the DMIS. The software calculates a path that uses the fewest number of angles to maximise efficiency.

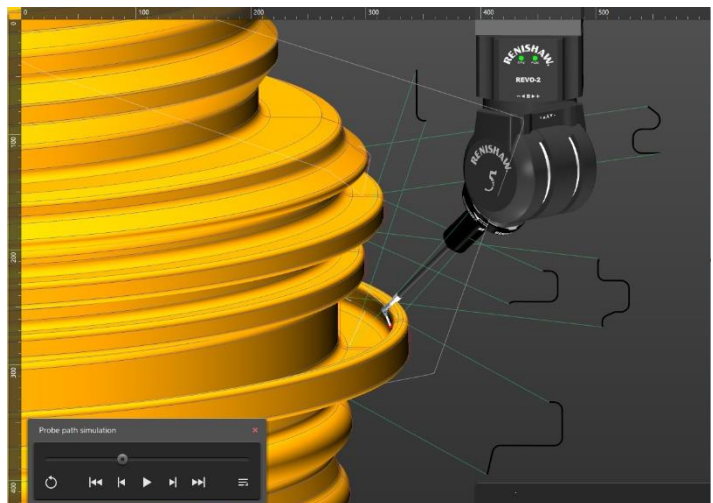


Figure 6 – RSP3 curve measurement

#### Fixed head angle segments

- Fixed head angle segments provide the user with the ability to set up segments of the RSP3 measurement curve where the probe will not come away from the

surface to change the head angle. This allows the user to meet requirements of high accuracy zones along a single curve path.

### 3.2 Options for “RSP2 Curve” measurement

Curves are defined by either the selection of edges from the CAD model, MODUS slices or by clicking points on a plane.

Previously this option was known as “Curves” but, with the addition of RSP3 Module support, the name has been updated. The previous options are still available and 2 additional options have been added in this release.

#### Create an edge offset on a plane

- The required plane can be selected on the CAD model and then the desired edges can be chosen. An offset value is then applied to these edges.
- In addition to the settings to create collision free paths more graphical options will allow for joining and trimming of the paths to provide the most efficient path.
- Multiple edges can be selected on one face and then joined together to create measurements that do not leave the surface, reducing the time taken for moves between measurements.

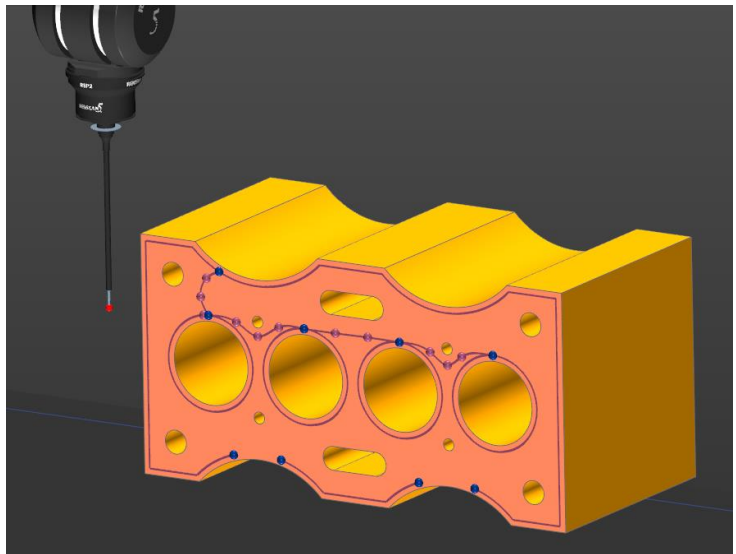


Figure 7 – RSP2 Edge offset path

#### Create an edge offset avoiding features on a plane

- Once a plane and edge have been selected there could be CAD geometry which the measurement needs to avoid. This option automatically detects and avoids this geometry, updating the path as offset values are adjusted.
- In addition to the settings to create collision free paths, more graphical options will allow for joining and trimming of the paths to provide the most efficient path.
- This option only allows a user to select a single edge on each curve measurement.

#### Constrained CMM motion

- The additional tools provided in the “RSP2 Curve” module will also make use of the technology that allows CMM motion to be constrained to only allow movement of the CMM along a single axis.

- This has proven metrology benefits because it reduces machine motion, for example by improving the CMM's flatness measuring capability.

## **Other software features**

Probe Clearances – Improved definition of the clearance volumes around the probe and styli models are now used throughout the 4 modules available. This allows the probe tip clearance to be closer or further from the part than the head clearance, allowing more complex collision avoidance.

Help and training – Tutorial videos are provided in the installation to demonstrate how to use the software. Demonstration CAD Models are also included to assist in training.

## **Software compatibility**

It is advised that MODUS 1.9 or later is used in conjunction with this product.

To use joined sweeps in “Blade” section measurement, MODUS 1.9 or later must be used with UCCsuite version 5.3 or later.

## **Hardware compatibility**

This version of MODUS Planning Suite supports REVO with the RSP2 and RSP3 probes.

## **Licences**

MODUS Planning Suite has built on the technology developed from the APEXBlade software. The required APEXBlade measurement strategies have been included in the “Blade” module of the software.

Any APEXBlade customer can upgrade to the blade module of MODUS Planning Suite if they have an up to date maintenance contract. This will require an orange dongle (P-PC01-0057). They will require both their current licence for continued use of the APEXBlade software and the new licence for MODUS Planning Suite.

Each module can be purchased as a separate product. The licence for the “Curve” module includes the functions of both the “RSP2 Curve” and “RSP3 Curve” modules. Anyone with this licence already will automatically be able to access both modules.

## Part numbers

Note: An update has been made to the previous software codes removing the '-01' suffix. Pricing is available from your local Renishaw office or distributor.

<b>MODUS Planning Suite</b>	<b>Part number</b>
<b>Customer Licences – Permanent</b>	
MODUS Planning Suite – Patch - Customer (Dongle and licence)	A-5871-4000
MODUS Planning Suite – Patch - Customer (Add-on to existing dongle)	CS-SOF-SW-01-4000
MODUS Planning Suite – Curve - Customer (Dongle and licence)	A-5871-4010
MODUS Planning Suite – Curve - Customer (Add-on to existing dongle)	CS-SOF-SW-01-4010
MODUS Planning Suite – Blade - Customer (Dongle and licence)	A-5871-4020
MODUS Planning Suite – Blade - Customer (Add-on to existing dongle)	CS-SOF-SW-01-4020
MODUS Planning Suite – Blade Additional - Customer (Dongle and licence)	A-5871-4028
MODUS Planning Suite – Blade Additional - Customer (Add-on to existing dongle)	CS-SOF-SW-01-4028
<b>Evaluation Licences – 1 Month</b>	
MODUS Planning Suite – All - Evaluation (Trusted Storage)	CS-SOF-SW-01-4033

## Maintenance codes

All customer licences come with one year maintenance as standard. The following codes are for additional maintenance to receive software updates, support and bug fixes: Pricing is available from your local Renishaw office or distributor

<b>MODUS Planning Suite</b>	<b>Part number</b>
<b>One Year Maintenance</b>	
MODUS Planning Suite – Patch - One Year Maintenance	CS-SOF-SW-01-4006
MODUS Planning Suite – Curve - One Year Maintenance	CS-SOF-SW-01-4016
MODUS Planning Suite – Blade - One Year Maintenance	CS-SOF-SW-01-4026
<b>One Month Maintenance</b>	
MODUS Planning Suite – Patch – One Month Maintenance	CS-SOF-SW-01-4007
MODUS Planning Suite – Curve - One Month Maintenance	CS-SOF-SW-01-4017
MODUS Planning Suite – Blade - One Month Maintenance	CS-SOF-SW-01-4027

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