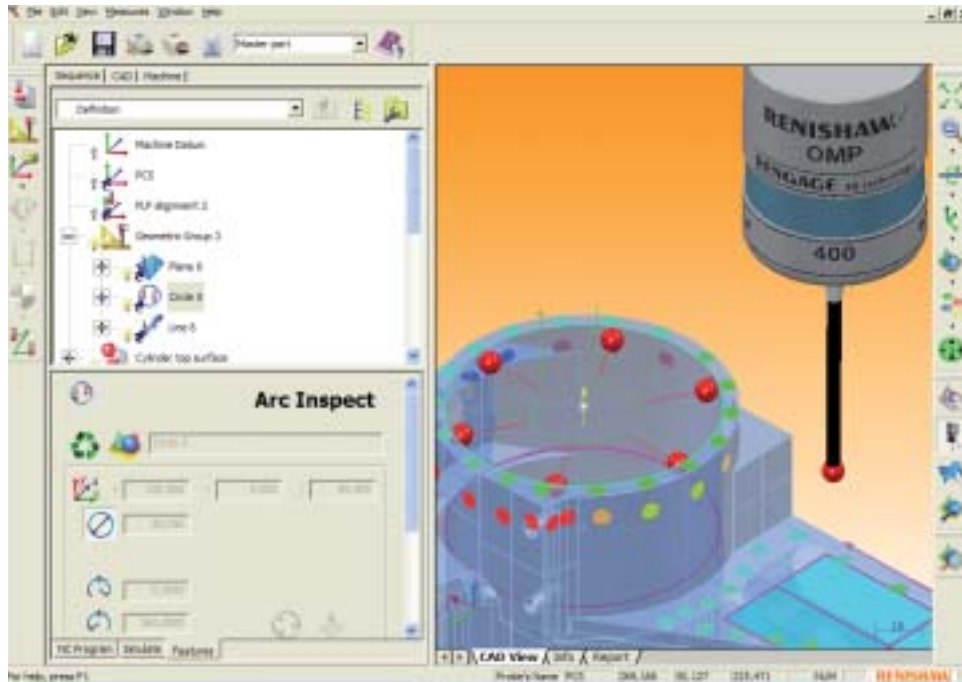


Renishaw OMV on-machine 3D verification software



System features

- Simple offline programming.
- Graphical and numerical reporting.
- Probe path simulation.
- Probe movements are protected.
- Instant feedback of part tolerance.
- Database of Renishaw probes and styli.
- Wide coverage of controllers.
- Simple probe qualification.
- Extensive CAD compatibility.
- Best-fit alignment.



Data sheet

Renishaw OMV: On-machine 3D verification software

CAD manipulation and image control

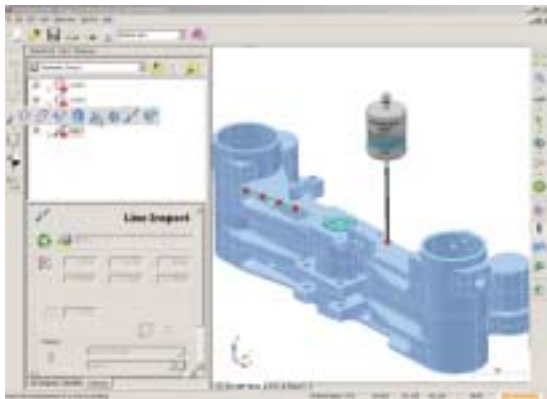
Many types of CAD formats are supported, some as standard, some as cost options. CAD origins can be translated, rotated, or scaled during import. Multiple CAD layers and custom colouring and hiding are supported making programming even easier.



Supported features - measurement

Probed features are split into two groups – 2D features and 3D features. Probed features can have their strategies changed allowing customisation of :-

- Number of points.
- Number of layers.
- Start and finish angles.
- Standoff, backoff and search distance.
- Position of measurement points.
- Height of approach and retract plane.



- 2D features
 - Plane - generated from 3+ user-selected points.
 - Circle - automatic generation of probe path with 4+ points, or use user-selected points.
 - Line - selected using 2+ user-selected points.
 - Slot - automatically identified from CAD geometry, or from user-selected points.
 - Rectangle - selected from CAD geometry, or from user-selected points.
- 3D features
 - Cylinder - selected from CAD geometry, or from user-selected points.
 - Cone - selected from CAD geometry, or from user-selected points.
 - Sphere - selected from CAD geometry, or from user-selected points.
 - Surface inspection - specified points probed using a vector normal to the surface, distance is measured from defined surface along probing line.
 - Freeform surfaces.

Alignment options

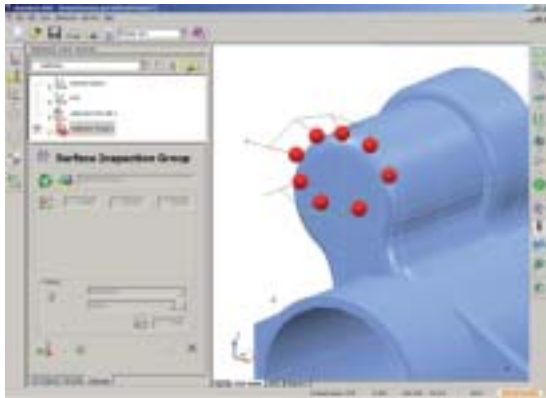
Renishaw OMV uses a measured alignment to update the tool path during import or export to the machine tool. Once alignment data has been collected, new exported paths will be corrected to fit the part more accurately. Since all the processing is done on the PC, no update of the WCS is required.



- Alignment from file - allows a preset alignment to be loaded, for use in fixturing systems etc.
- Plane-line-point alignment - uses geometric features to measure the alignment of the object based around a rough setting of the work co-ordinate system.
- Best-fit - uses surface inspection points to produce a least-squares fit to the CAD model.

Point selection features

Surface or wireframe geometry is selected directly from the model. Double clicking generates surface points and the probing vectors are automatically calculated. The probe paths are displayed as green lines with red depicting the probe touch path. The mouse pointer changes to a hand, allowing the move path to be changed.

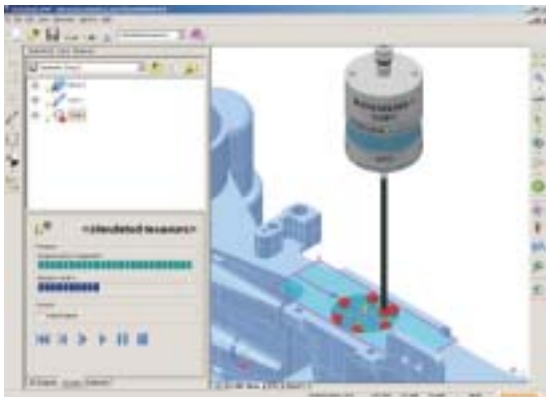


- Point-and-click selection of geometric features and freeform surface points.
- Instant generation and visibility of the probe path.
- Full control of tool path.
- Insertion of intermediate moves.

Measurement and datum options

- Distance measurement - allows the distance between two defined points to be measured.
 - Results can be output in either direct distance, or co-ordinate based values.
- Datum options - allow information on geometric groups to be output in the verification report, relative to a specific defined point.
 - Datum based on a measured plane line and point.
 - Datum based on a given vector offset.
 - Datum based on a given axis rotation.
 - 3D datum shift based on the position of a 3D feature.
 - 2D datum shift based on the position of a 2D feature.

Simulation options



- Simulate the full probe path or an individual feature.
- Translate, zoom, rotate without redrawing.
- Choose from the entire catalogue of Renishaw machine tool probes.
- Comprehensive stylus catalogue and assembly builder.

Reporting options

Reporting allows the feature parameters to be toleranced and displayed. Individual elements can be switched off if not required.



- Tabular reporting.
 - HTML or Microsoft Excel format.
 - Fully customisable reports generated using an HTML template.
 - Choice of displayed results from geometric features.
- Graphical reporting.
 - Display of measured values using colour-coded surface points, call-out labels or in-place values.
 - Graduated colour scales drawn with point data.
 - At-a-glance view of distribution of point deviations on report printouts.

Data sheet

Renishaw OMV: On-machine 3D verification software

Recommended probing systems

Renishaw recommends the use of non-lobing probes such as the OMP400 or MP700, for the best metrology performance. Use of Renishaw probes that do not contain strain-gauge technology will result in decreased performance. Renishaw will not support the use of non-Renishaw probes with this software.

Machine resident macros

Renishaw OMV requires Renishaw machine resident macros to perform the probe calibration. Renishaw OMV requires either "Renishaw Inspection Plus" or "Renishaw Easy Probe" to be installed on the machine controller.

Note: Not applicable on the Heidenhain controllers.

System requirements

Renishaw OMV requires Microsoft® Windows® XP Professional 2002 (or later) or Microsoft® Windows® 2000 Professional, and a computer with a minimum of a 800 MHz Intel Pentium II (or equivalent) processor, 256 MB of RAM, 250 MB hard disc space and an NVIDIA GeForce4 graphics card (or equivalent). For use with larger CAD files, a faster processor, more RAM and a more recent graphics card will give better performance.

System components

OMP400 or MP700 probe

The entire range of Renishaw machine tool inspection probes is supported in Renishaw OMV. Renishaw recommends the use of the high accuracy strain gauge OMP400 and MP700 which give accurate, repeatable results and reduce calibration times.

OMM (optical machine module)

Transmits CNC messages to the probe and receives data signals for transmission to the MI 12.

OMI (optical machine interface)

An alternative to the OMM + MI 12 interface, combining the functions of both OMM and MI 12 in one unit.

PSU3 power supply unit for MI 12 or OMI

Used when 24 V supply is not available from the machine.

Communications link

Method of sending and receiving or loading and downloading programs and data.

Software

Renishaw OMV – provides flexibility to customise probing strategies to suit the application.

Supported controllers, CAD formats and languages

- Most machine tool controllers that support probing run this software:
 - Fanuc
 - Siemens 840D
 - Heidenhain i530 (controller option required for optimum performance)
 - Haas
 - Selca
 - Mitsubishi Meldas
 - Mori Seiki
 - Mazak ISO
 - Makino
 - Yasnac
 - Hitachi Seiki
- Renishaw OMV operates with the following formats:
 - Unigraphics*
 - VDA/FS
 - IGES
 - STEP
 - SET
 - AutoCAD*
 - SDRC – Ideas*
 - ProE2000i2*
 - ProE2001*
 - ProE2001i*
 - WildFire*
 - Solid Edge*
 - Solid Works*
 - CATIA V5*
 - Cimatron*
 - Parasolids*
- Renishaw OMV software is supported in the following languages:
 - English
 - French
 - German
 - Italian
 - Japanese
 - Korean
 - Russian
 - Simplified Chinese
 - Spanish
 - Portuguese (Brazilian)

If your controller is not listed please contact omv@renishaw.com. Extra controllers are being added at all times.

* Cost option

other formats may be available – please contact omv@renishaw.com.

Example software fragment (for Fanuc 16i)

Select the post processor, enter the program name / number & probe location and the program is produced.



Sample Fanuc code:

```
#5=25.5
#6=26.0
#7=0.
#8=0.
#9=1.
#19=0.0
#20=25.5
#21=21.0
GOTO9999
N2
G31X[0.0-#502]Y[25.5-#503]Z31.0F3000.
G31X[-20.556-#502]Y[-24.62-#503]Z31.0F3000.
G31X[-20.556-#502]Y[-24.62-#503]Z31.0F3000.
(PPOINT 3)
#29=3
#25=-20.566
#26=-24.62
#27=31.0
#4=-20.566
#5=-24.62
#6=26.0
#7=0.
#8=0.
#9=1.
#19=-20.566
#20=-24.62
#21=21.0
GOTO9999
N3
```

continued

Sample Fanuc code continued:

```
G31X[-20.556-#502]Y[-24.62-#503]Z31.0F3000.
G31X[-20.556-#502]Y[-24.62-#503]Z41.0F3000.
(FINISH PROGRAM)
DPRNT [END]
PCLOS
GOTO1000
N9999 (MEASURE POINT)
#22=#25-#502-#5061
#23=#26-#503-#5062
#24=#27+#13-#5063
#14=[#22*#22]+[#23*#23]+[#24*#24]
IF[#14GT#15]THEN#3000=1 (PATH OBSTRUCTED)
DPRNT[G800*N#29[40]*X#4[53]*Y#5[53]*Z#6[53]*I#7[53]
*J#8[53]*K#9[53]*O#10[53]
G4X0.1 (Two Touch)
G31X[#19-#502]Y[#20-#503]Z#21F3000.
#22=#5061+[#7*#16]
#23=#5062+[#8*#16]
#24=#5063-#13+[#9*#16]
G01X#22Y#23Z#24F3000.
G4X0.3
#4=#5041
#5=#5042
#6=#5043
#30=#19-#502
#31=#20-#503
#32=#21+#13
#3004=2
G31X[#19-#502]Y[#20-#503]Z#21F30.
#1=#5041
#2=#5042
#3=#5043
IF[ABS[#4-#1]+ABS[#5-#2]+ABS[#6-#3]]LT0.05]THEN#18=1
IF[ABS[#30-#1]+ABS[#31-#2]+ABS[#32-#3]]LT0.05]THEN#18=2
G01X[#25-#502]Y[#26-#503]Z#27F3000.
#3004=0
IF[#18EQ1]THEN#3000=1 (PROBE OPEN)
IF[#18EQ2]THEN#3000=2 (PROBE FAIL)
#1=#5061+#502
#2=#5062+#503
#3=#5063-#13+#28
DPRNT[G801*N#29[40]*X#1[53]*Y#2[53]*Z#3[53]*R#501[53]]
GOTO#29
N1000
M30
%
```


Maintenance option

The Renishaw maintenance programme provides regular CD releases approximately every 6 months, which ensure that you are kept up to date with the latest developments.

Part numbers for Renishaw OMV probe software for machine tools

Parts list – please quote the part number when ordering equipment

Part number	Description	Part number	Description
A-5369-1000	Renishaw OMV software kit	A-5369-3005	Additional Mazak post
A-5369-4000	Renishaw OMV maintenance	A-5369-3006	Additional MillPlus post
A-5369-2001	Renishaw OMV + Fanuc post	A-5369-3007	Additional Mitsubishi Meldas post
A-5369-2002	Renishaw OMV + Haas post	A-5369-3008	Additional Mori Seiki post
A-5369-2003	Renishaw OMV + Siemens post	A-5369-3009	Additional Makino post
A-5369-2004	Renishaw OMV + Heidenhain post	A-5369-3010	Additional Yasnac post
A-5369-2005	Renishaw OMV + Mazak ISO post	A-5369-3011	Additional Hitachi Seiki post
A-5369-2006	Renishaw OMV + MillPlus post	A-5369-3012	Additional Selca post
A-5369-2007	Renishaw OMV + Mitsubishi Meldas post	A-5369-3013	Additional Andron post
A-5369-2008	Renishaw OMV + Mori Seiki post	A-5369-3014	Additional Fidia post
A-5369-2009	Renishaw OMV + Makino post	A-5369-5000	3 or more CAD translators
A-5369-2010	Renishaw OMV + Yasnac post	A-5369-5001	Parasolids
A-5369-2011	Renishaw OMV + Hitachi Seiki post	A-5369-5002	SDRC
A-5369-2012	Renishaw OMV + Selca post	A-5369-5003	ProE2000i2
A-5369-2013	Renishaw OMV + Andron post	A-5369-5004	ProE2001
A-5369-2014	Renishaw OMV + Fidia post	A-5369-5005	ProE2001i
A-5369-3001	Additional Fanuc post	A-5369-5006	WildFire
A-5369-3002	Additional Haas post	A-5369-5007	Solid Edge
A-5369-3003	Additional Siemens post	A-5369-5008	Solid Works
A-5369-3004	Additional Heidenhain post	A-5369-5009	CATIA V5
		A-5369-5010	Cimatron

For worldwide contact details, please visit our
 main web site at www.renishaw.com/contact



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