



spGauge

New Features in spGauge 2023.1

Armonicos Co., Ltd.



– New Features –

1. Expand 3D cross section to 2D
2. Principal curvature direction
3. Property of an error map inspection
4. Export welding points
5. Remove a welding point
6. Welding point: Image scaling
7. Report: Overlaying CAD in report
8. Welding point: Export more items to CSV
9. “Inspect convex area” option in deformation evaluation
10. Grinding direction for deformation evaluation
11. Unification Fit: Select elements from the tree
12. Center of gravity of point cloud data
13. 2D measure: Added selection method
14. Modified English
15. Added view operations in spGauge Viewer Light

– Others –

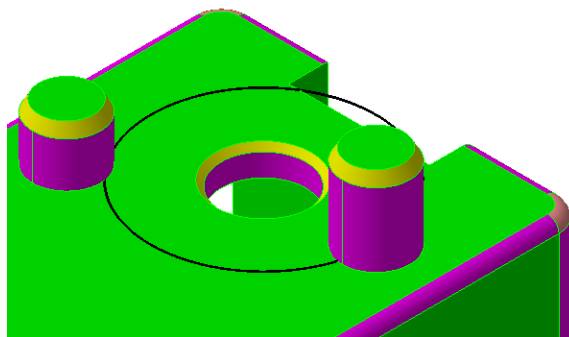
Improved Items

Addressed Issues

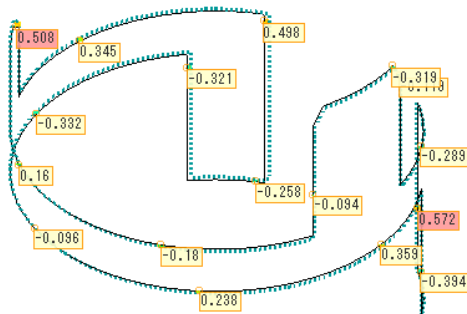
1. Expand 3D cross section to 2D

2D measurement can be made after expanding 3D cross section to a 2D plane.

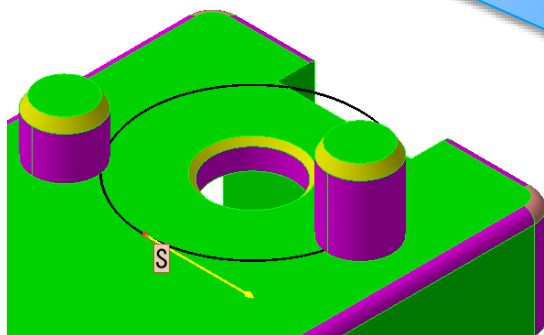
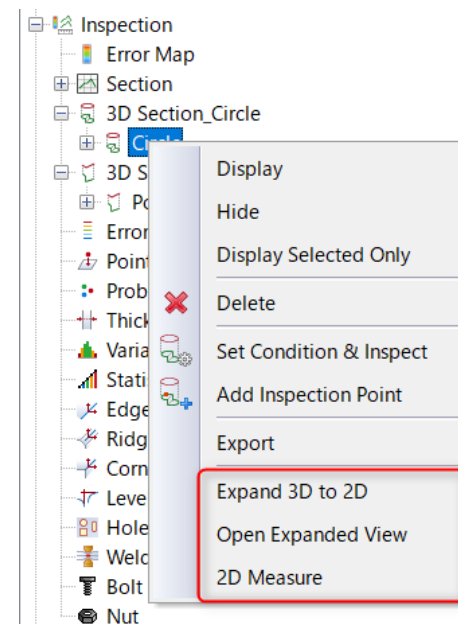
Tree: [Inspection]-[3D Section_Circle]-[Expand 3D to 2D]
[Inspection]-[3D Section_Polyline]-[Expand 3D to 2D]



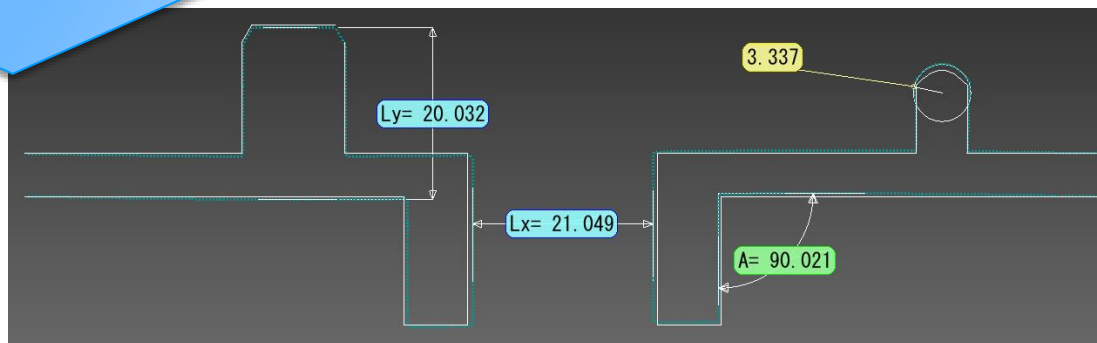
Location of 3D cross section



3D cross section



The starting location of expansion

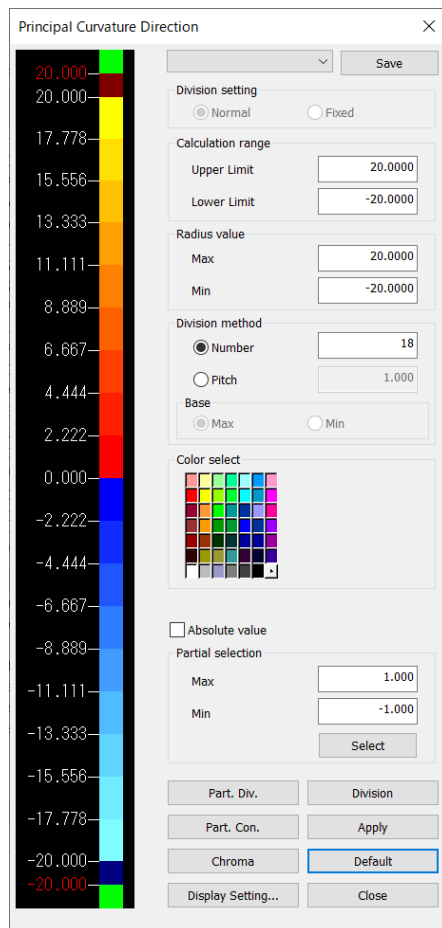
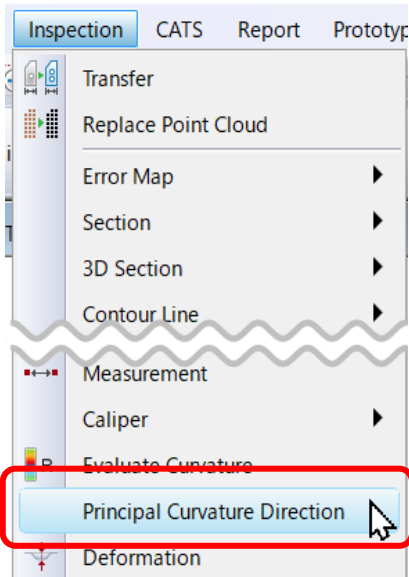


Using 2D measure after expansion

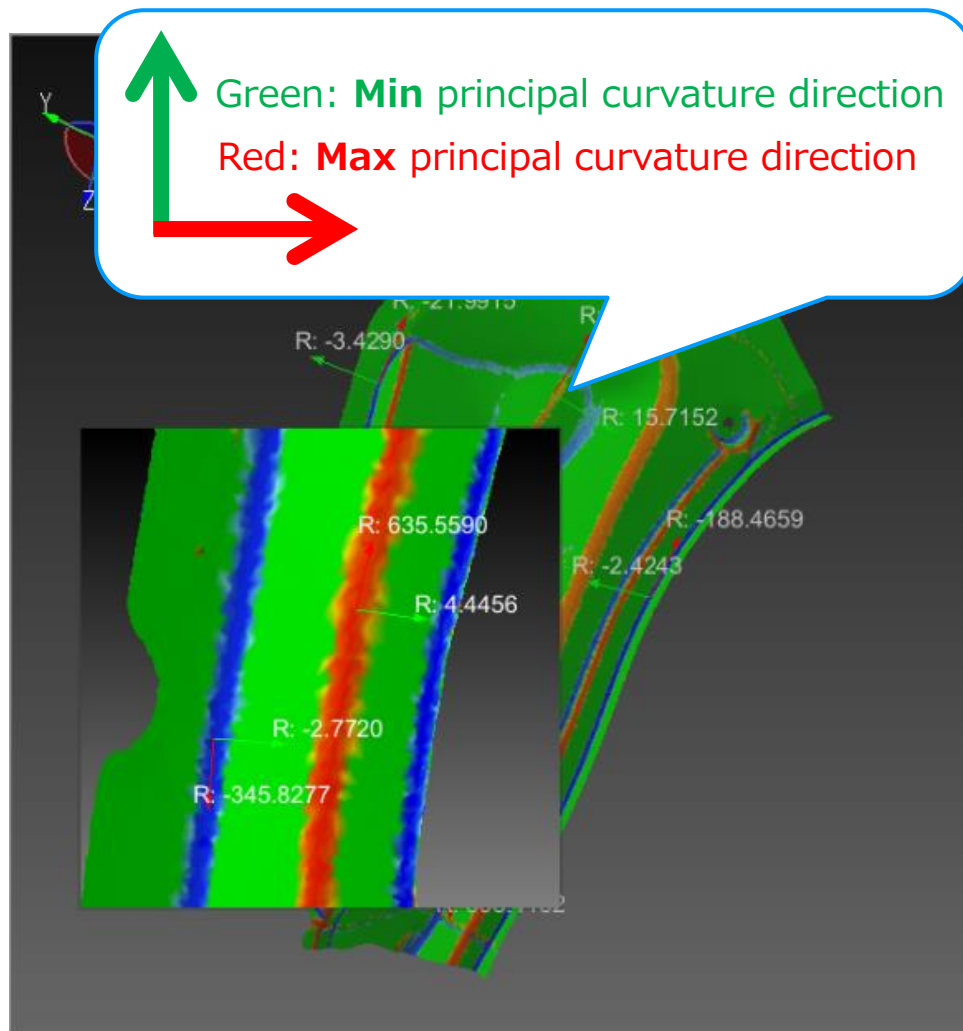
2. Principal curvature direction

Principal curvature directions are indicated by arrows in polygon mesh or point cloud

Menu: [Inspection]-[Principal Curvature Direction]



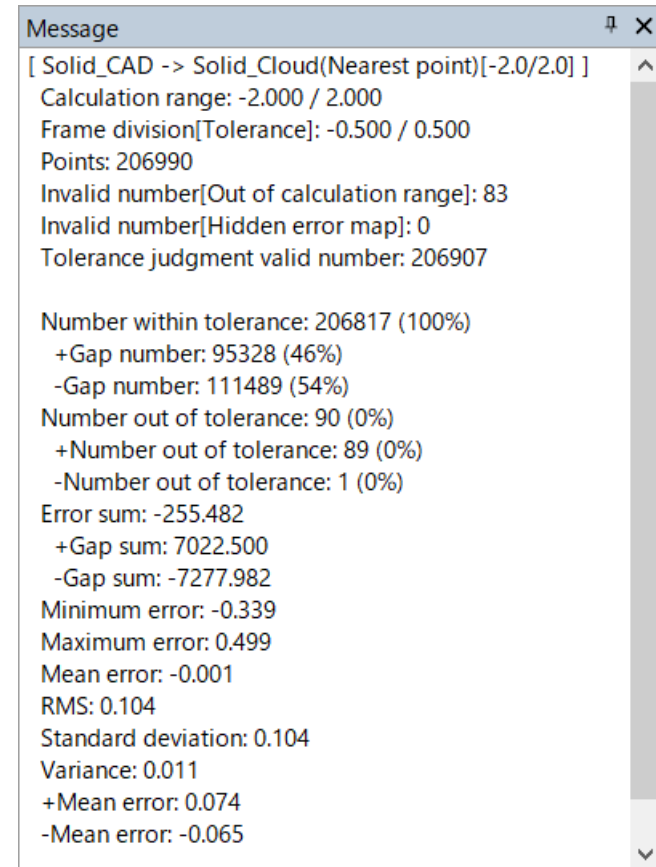
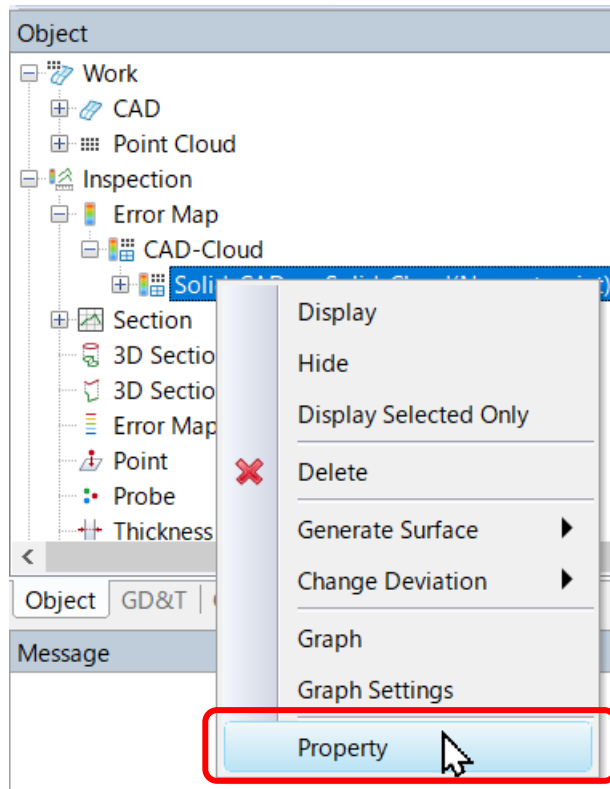
Green: **Min** principal curvature direction
Red: **Max** principal curvature direction



3. Property of error map inspection

Statistical analysis of the error map inspection result is shown in the message pane.

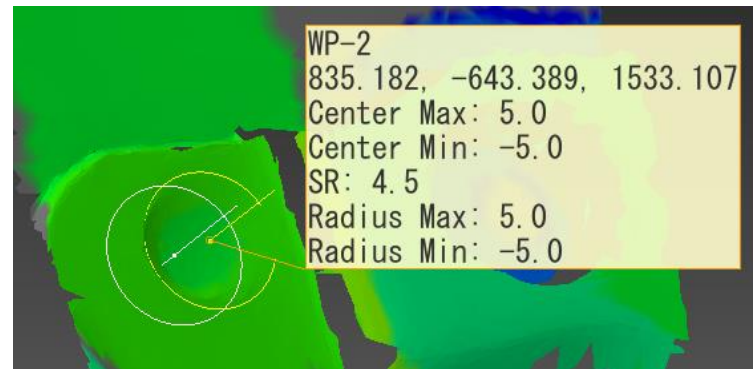
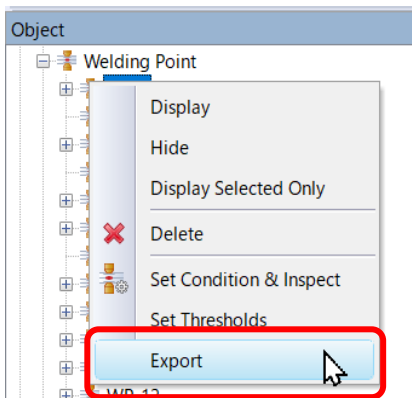
Tree: [Inspection]-[Error Map]-[CAD-Cloud]-[Property]



4. Export welding points

Welding points can now be exported from the object tree menu.
“Welding point name, Fundamental data, Radius, Threshold” are exported to CSV.

Tree [Inspection]-[Welding Point]-[Export]



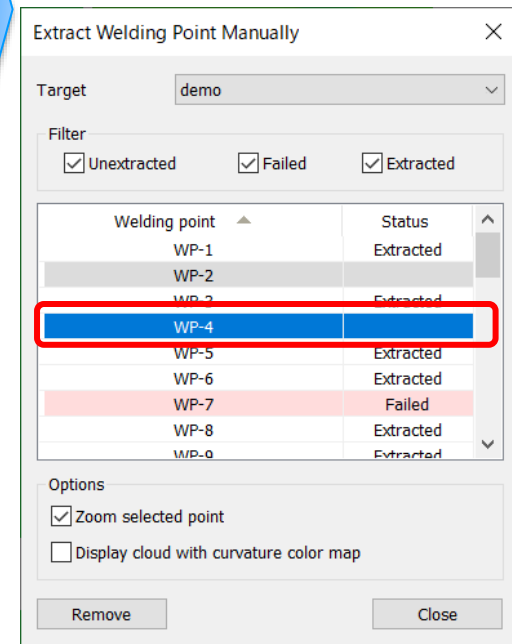
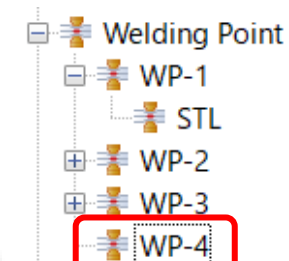
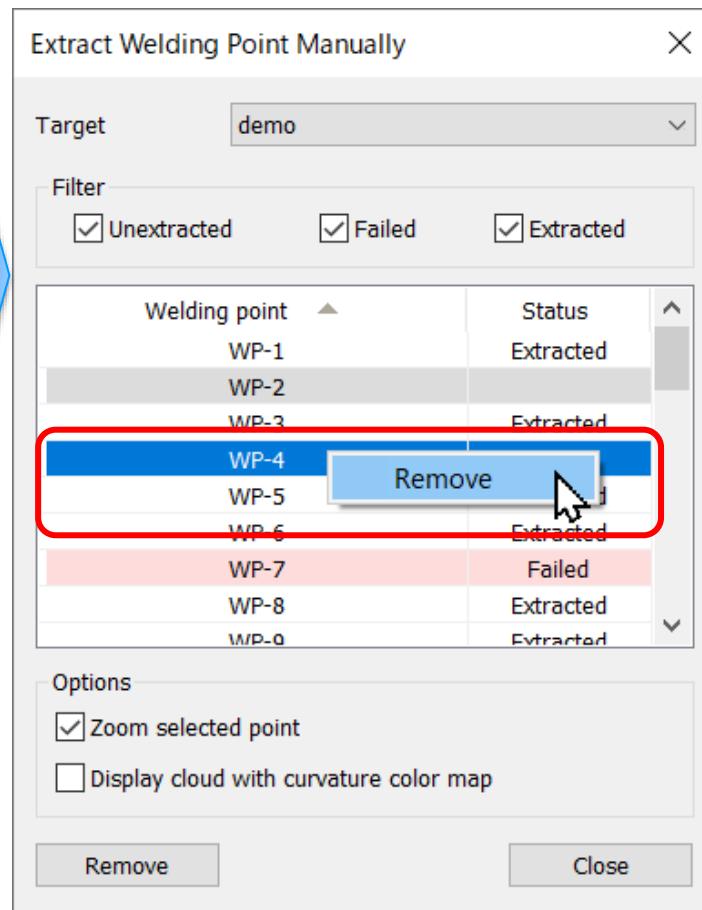
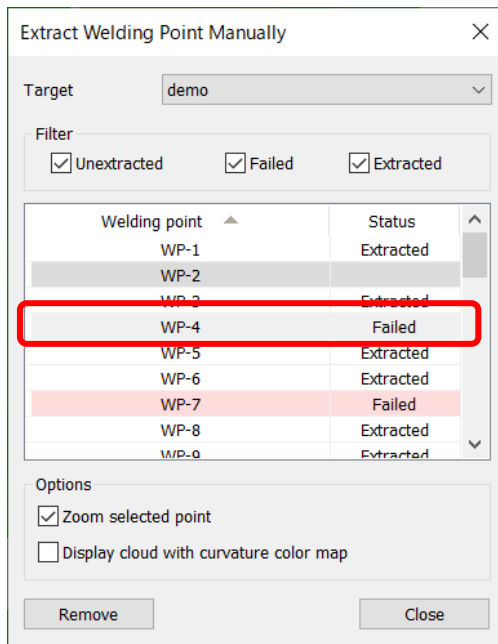
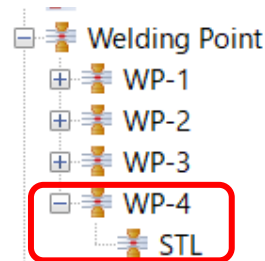
Welding point name	Center point's position Y	Center point's position Y	Center point's position Y	Normal X	Normal Y	Normal Z	Radius	Center point's lower threshold value	Center point's upper threshold value	Radius' lower threshold value	Radius' upper threshold value
WP-1	856.8727	-664.612	1541.222	-0.71543	2.916225	9.538542	4.5	-5	5	-5	5
WP-2	835.1818	-643.389	1533.107	-0.71543	2.916225	9.538542	4.5	-5	5	-5	5
WP-3	835.1819	-676.86	1543.34	-0.71543	2.916225	9.538542	4.5	-5	5	-5	5
WP-4	835.1527	-620.039	1523.974	-0.71543	2.916225	9.538542	4.5	-5	5	-5	5

5. Remove a welding point

Reset a welding point that was extracted or failed to be extracted.

Menu: [Inspection]-[Welding Point]-[Extract Manually]

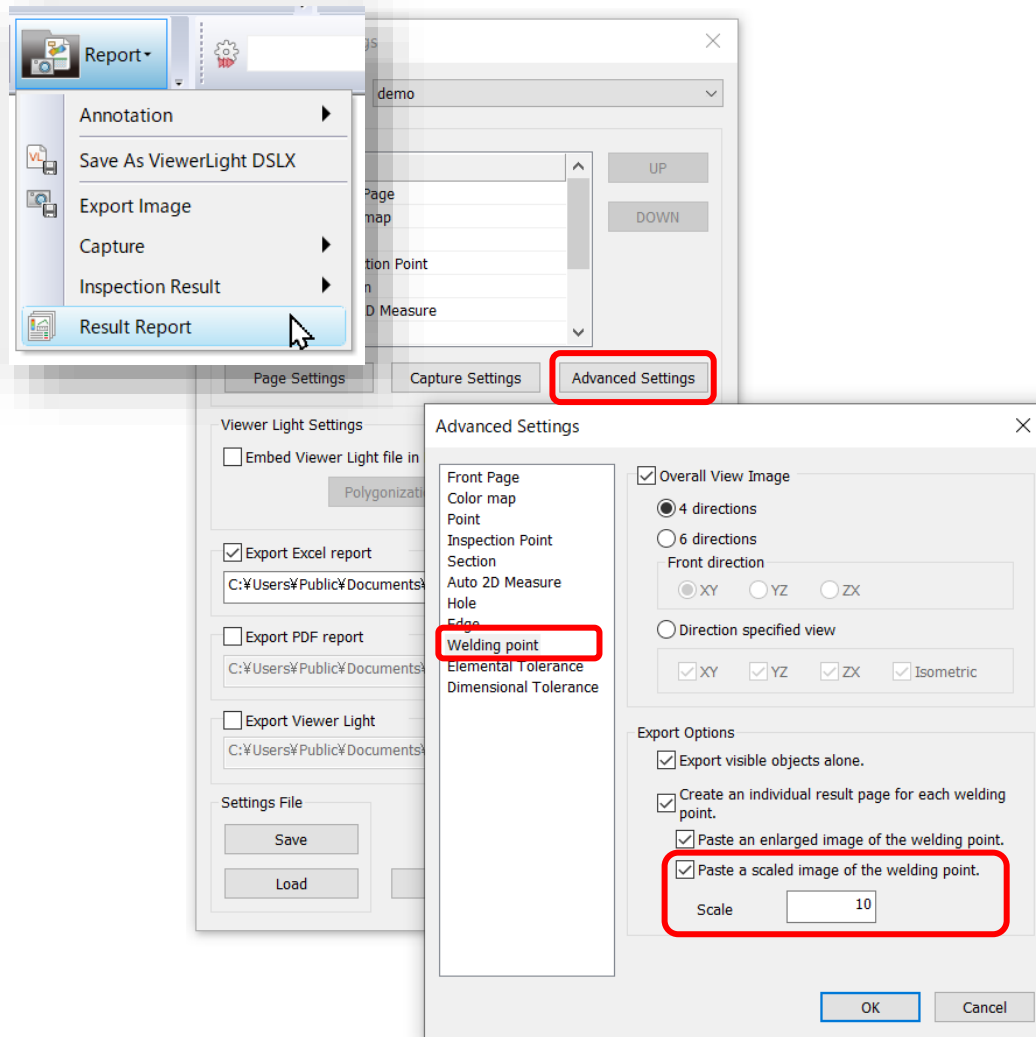
Tree [Inspection]-[Welding Point]-[Extract Manually]



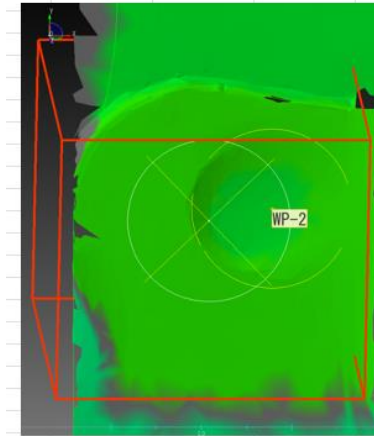
6. Welding point: Image scaling

Added an export option to specify image scale.

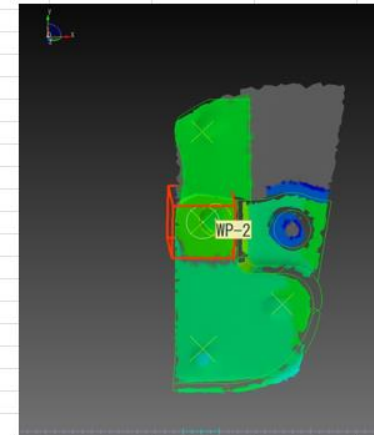
Menu: **[Report]-[Result Report]-[Advanced Settings]-[Welding point]**



Scale: 1



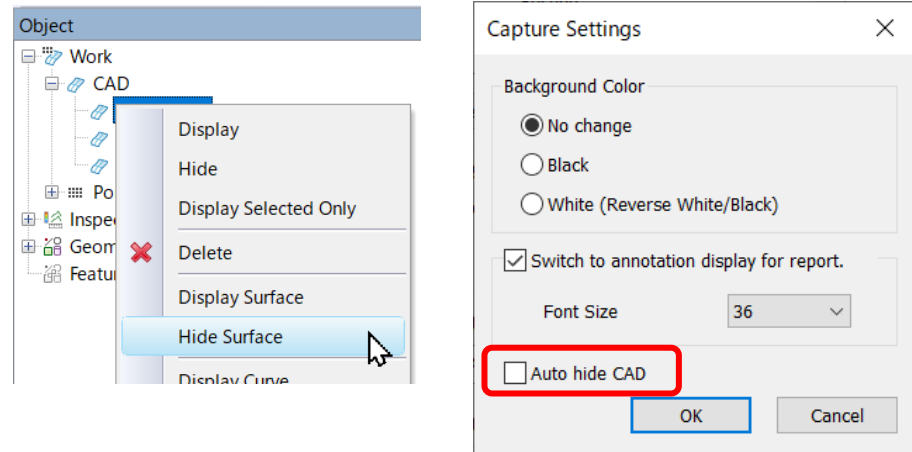
Scale: 5



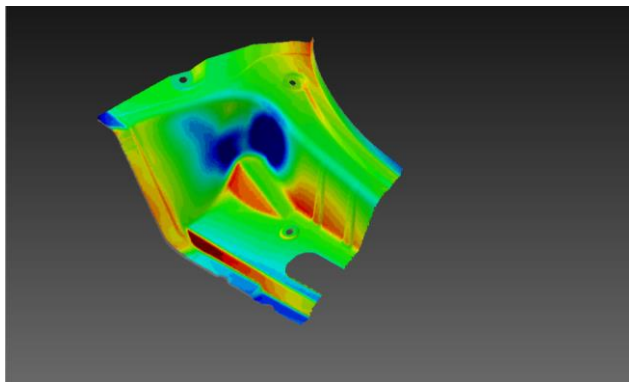
7. Report: Overlaying CAD in report

Added an option to capture and overlay CAD data when creating a report.
(In order to capture CAD wire frame alone, hide surfaces beforehand.)

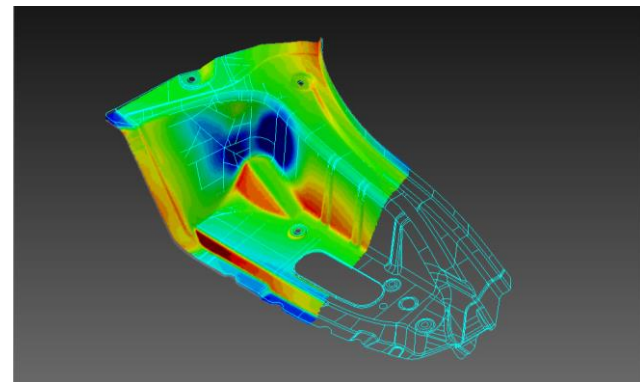
Menu: **[Report]-[Result Report]-[Capture Settings]: Auto Hide CAD**



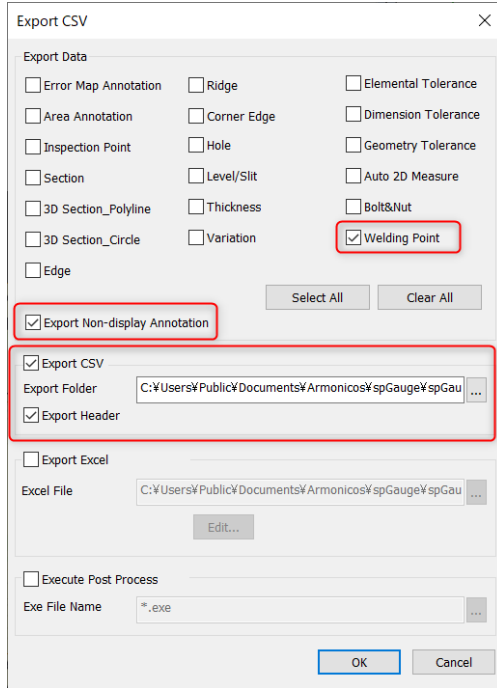
Auto hide CAD = ON



Auto hide CAD = OFF
(Show CAD wire frame)



8. Welding point: Export more items to CSV



Export CSV dialog box showing options for exporting data. The 'Welding Point' checkbox is checked. The 'Export CSV' checkbox is also checked, and the 'Export Folder' is set to 'C:\Users\Public\Documents\Armonicos\spGauge\spGau...'. The 'Export Header' checkbox is checked. The 'Export Excel' checkbox is unchecked. The 'Execute Post Process' checkbox is unchecked. The 'Exe File Name' is set to '*.exe'.

Added items from inspection result to be exported to CSV.

Menu: **[Report]-[Inspection Result]-[CSV]**

WP-1
856.873, -664.612, 1541.222
dx: -2.001 dy: -1.258 dz: -0.969
dxy: 2.363 dxz: 2.223 dyz: 1.588
Center Max: 5.0
Center Min: -5.0
SR: 4.5
Radius Max: 5.0
Radius Min: -5.0
Comments added in the annotation.
New lines are separated by spaces.

Index Name	NominalNormalX	NominalNormalY	NominalNormalZ	ActualNormalX	ActualNormalY	ActualNormalZ	DXZ	DX	DY	DZ	Extraction Result	Judge(0=OK)	Comment			
WP-1	-0.715	2.916	9.539	-0.989	2.493	9.634	2.554	2.363	2.223	1.588	-2.001	-1.258	-0.969	0	0	Comments added here
WP-2	-0.715	2.916	9.539	-0.558	2.9									0	0	
WP-3	-0.715	2.916	9.539	-0.528	2.8									0	0	
WP-4	-0.715	2.916	9.539	-0.268	3.4									0	0	

Extraction result:
0 = Extracted

Extraction result:

0 = Extracted

1 = Extraction failed

2 = Not extracted

9. "Inspect convex area" in deformation evaluation

Added [Inspect convex area] option in [Error] inspection method dialog in [2D Section] kind of grindstone.

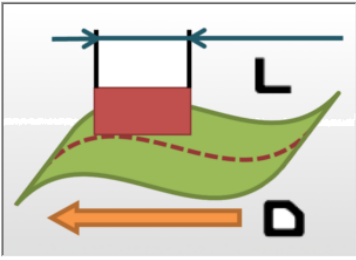
Menu: [Inspection]-[Deformation Evaluation]:

Error

Grindstone Comparison between Surface and Polygon

Kind of grindstone

☐ Cylinder ☐ Cuboid ☒ 2D Section



Width (radius) of grindstone

Length of grindstone

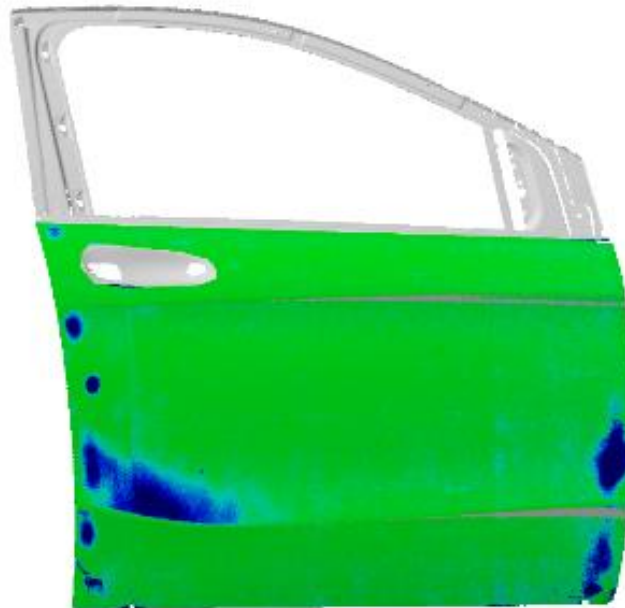
Direction of rubbing

☐ Inspect concave area ☒ Inspect convex area

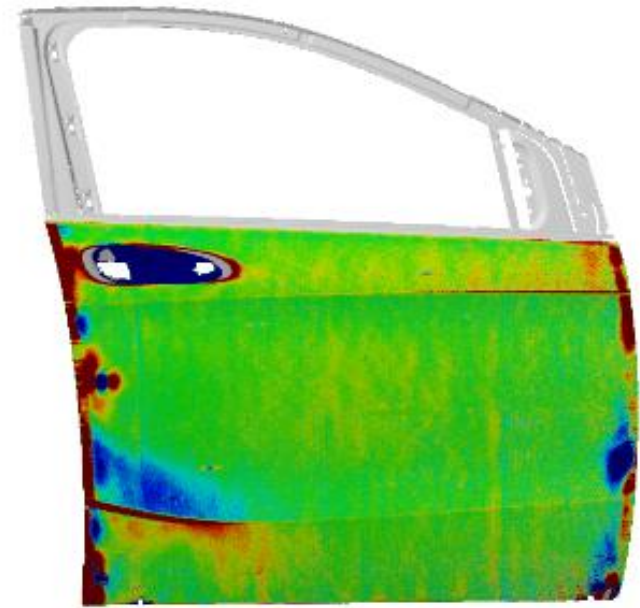
☐ Rough inspection (2D Section)

Inspection pitch

Inspect convex area = OFF



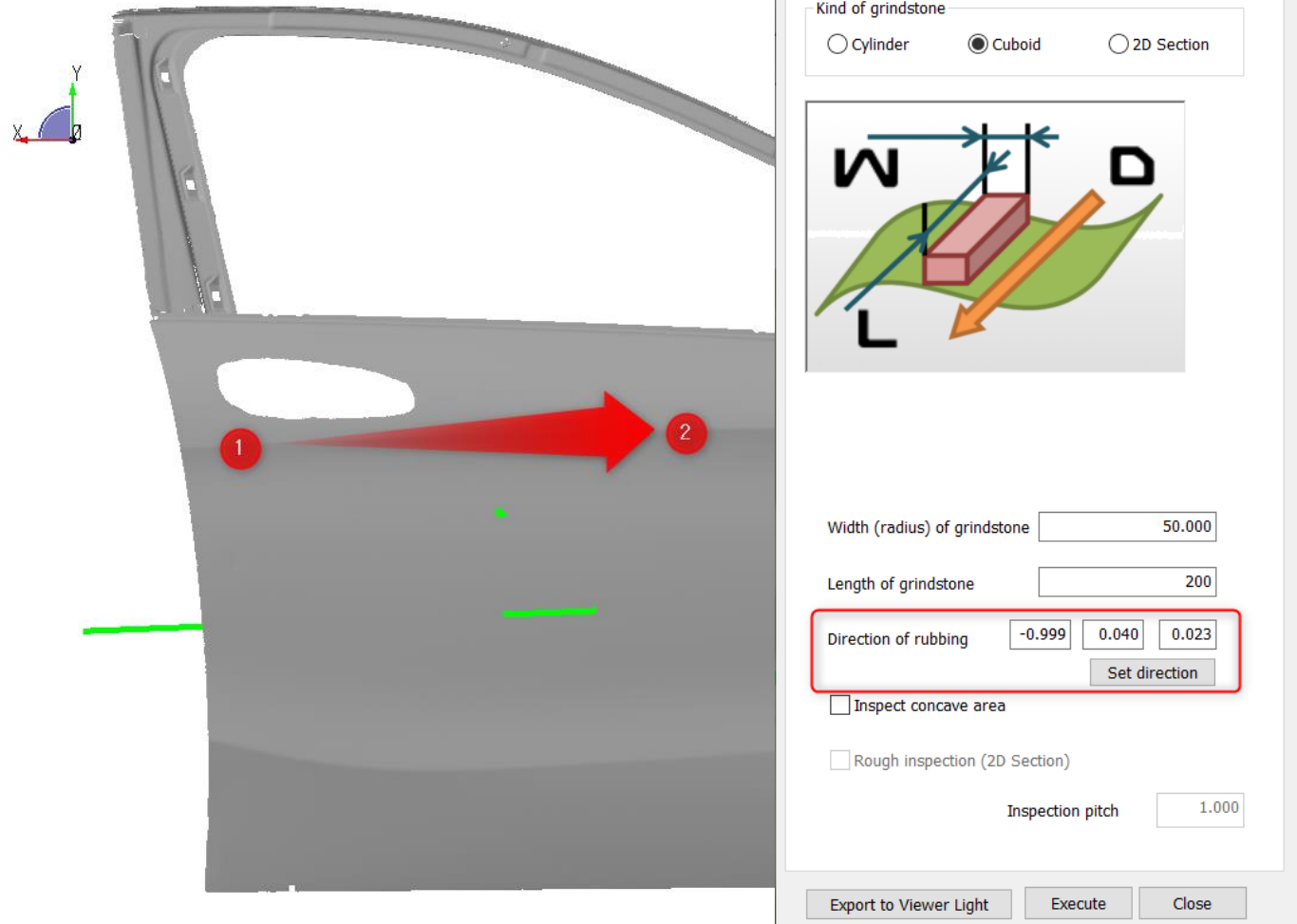
Inspect convex area = ON



10. Grinding direction for deformation evaluation

Use [Set direction] and indicate directly on the view to configure the grinding direction (Cuboid & 2D Section grindstones).

Menu: [Inspection]-[Deformation Evaluation]

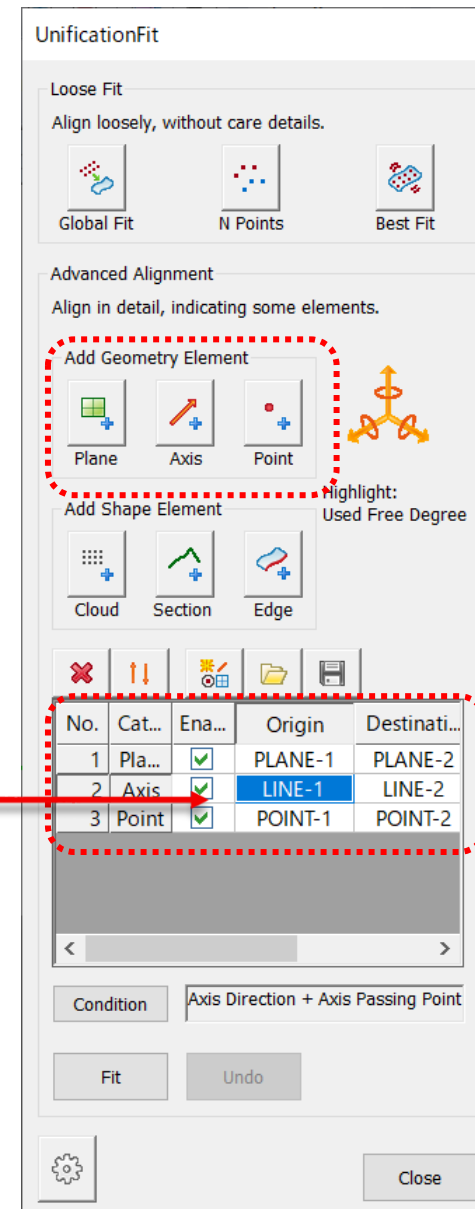
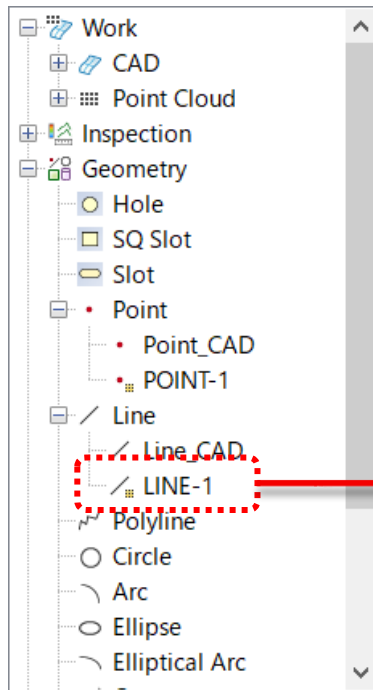


The screenshot displays a 3D model of a car door on the left. A red arrow points from a red circle labeled '1' to another red circle labeled '2', indicating the grinding direction. A green line is also visible on the door's surface. On the right, a settings panel titled 'Error' is shown. The 'Grindstone' tab is selected, showing 'Comparison between Surface and Polygon'. Under 'Kind of grindstone', 'Cuboid' is selected. A diagram illustrates the grinding process with a red cuboid on a green surface, with axes W, D, and L. Below the diagram, the 'Width (radius) of grindstone' is set to 50.000, and the 'Length of grindstone' is set to 200. The 'Direction of rubbing' is set to -0.999, 0.040, and 0.023, with a 'Set direction' button. There are checkboxes for 'Inspect concave area' and 'Rough inspection (2D Section)'. The 'Inspection pitch' is set to 1.000. At the bottom are buttons for 'Export to Viewer Light', 'Execute', and 'Close'.

11. Unification Fit: Select elements from tree

Select geometry elements from the tree.

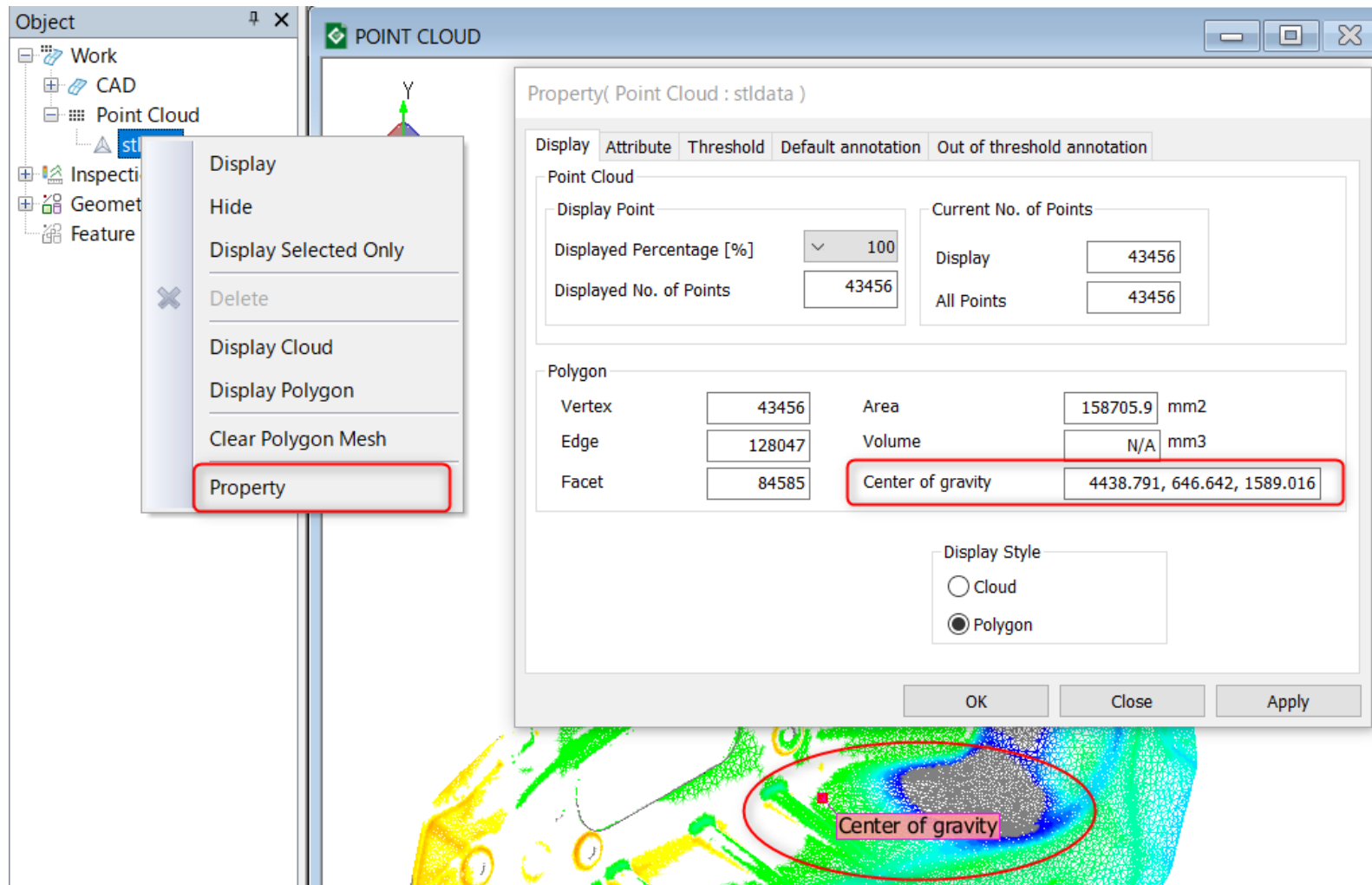
Menu: **[Alignment]-[Unification Fit]**



12. Center of gravity of point cloud data

A of gravity of point cloud data can now be Display.

Tree: **[Point Cloud]-[Property]: Display tab**



13. 2D measure: Added selection method

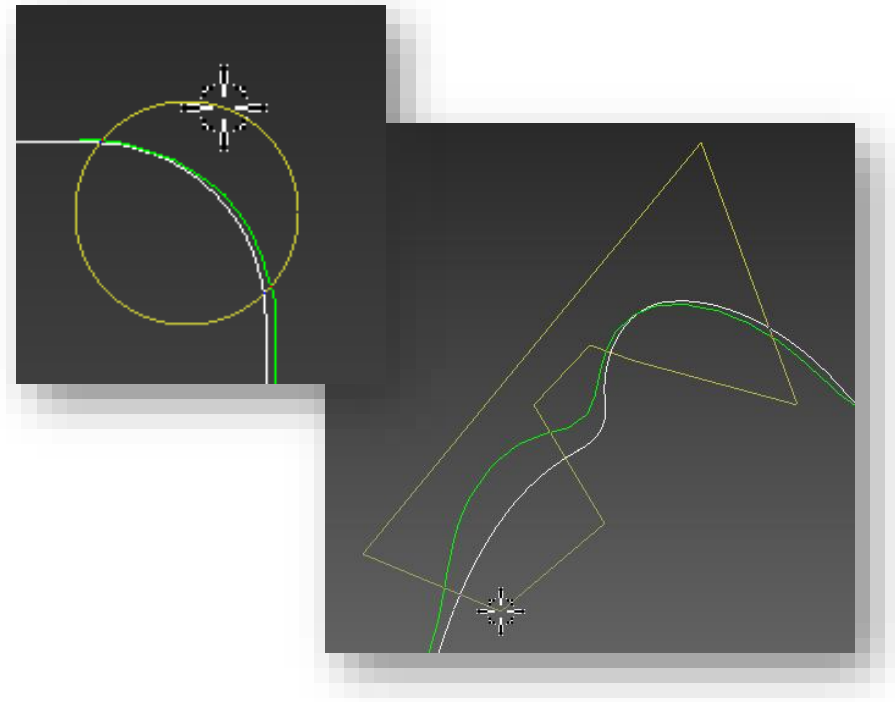
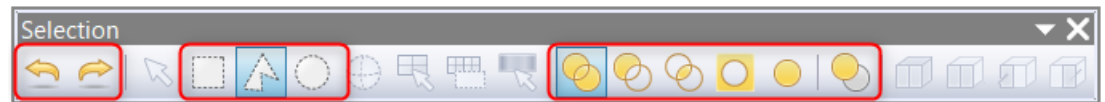
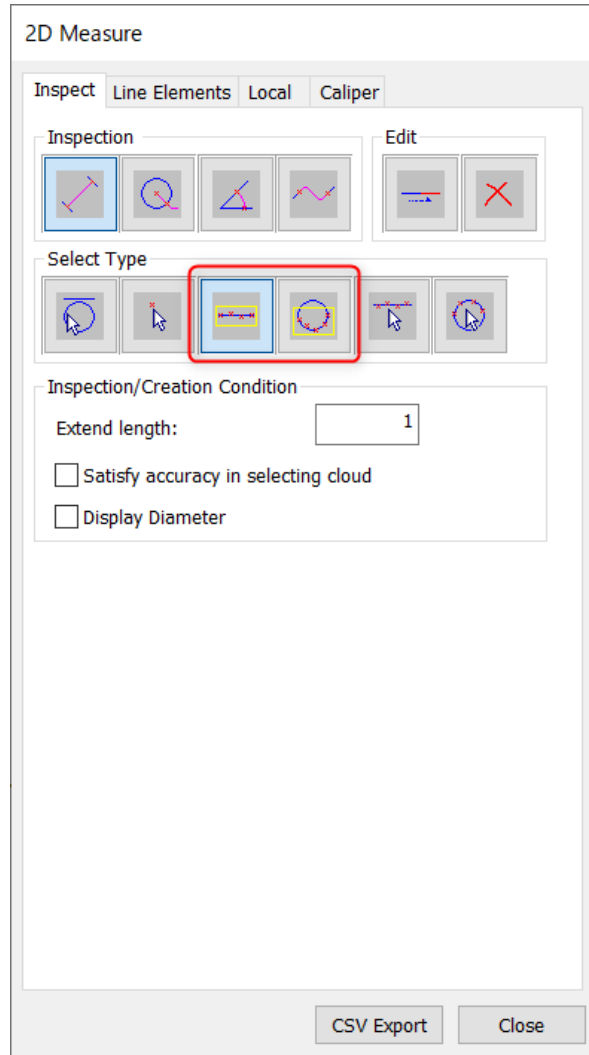
[2D Measure] Now selection can now be made using the Selection toolbar

Tree:

[Inspection]-[Section]-[2D Measure]

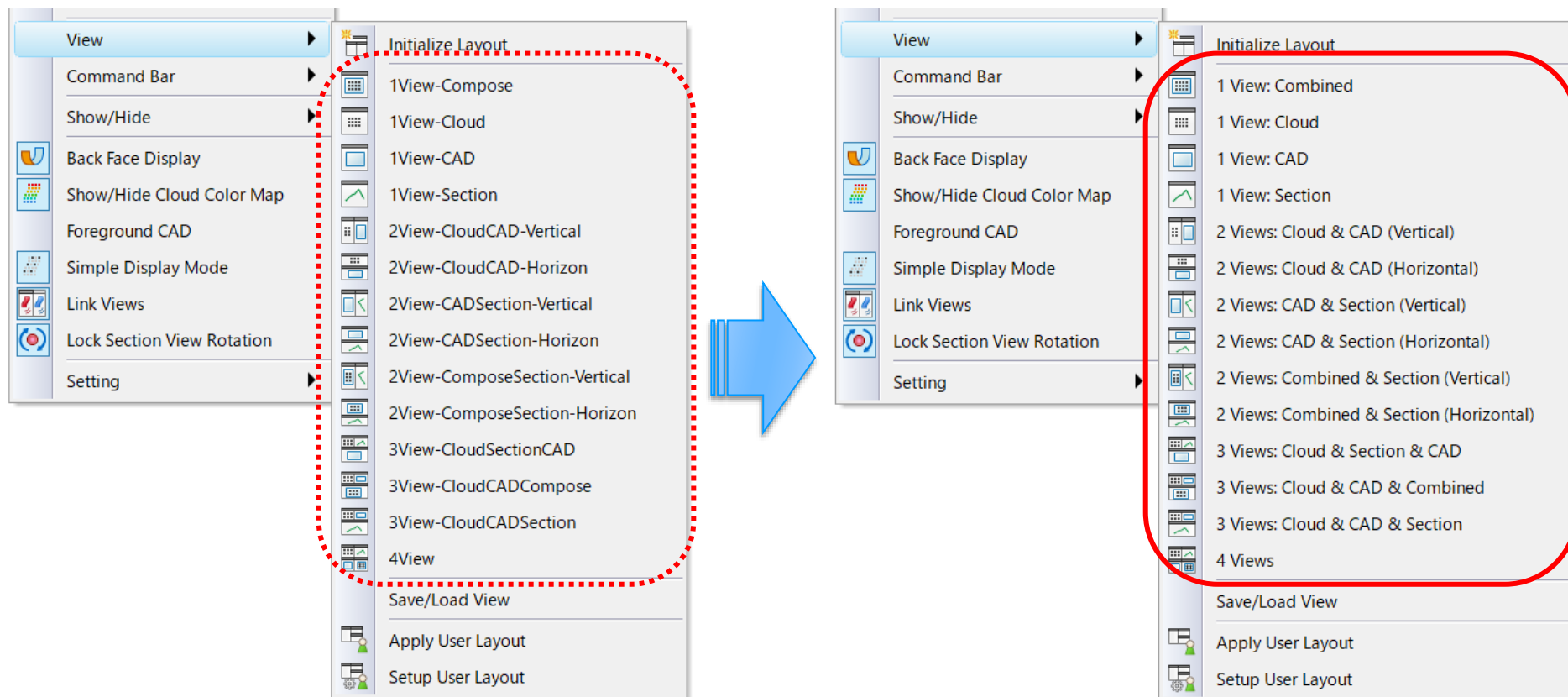
[Inspection]-[3D Section_Circle]-[2D Measure]

[Inspection]-[3D Section_Polyline]-[2D Measure]



14. Modified English

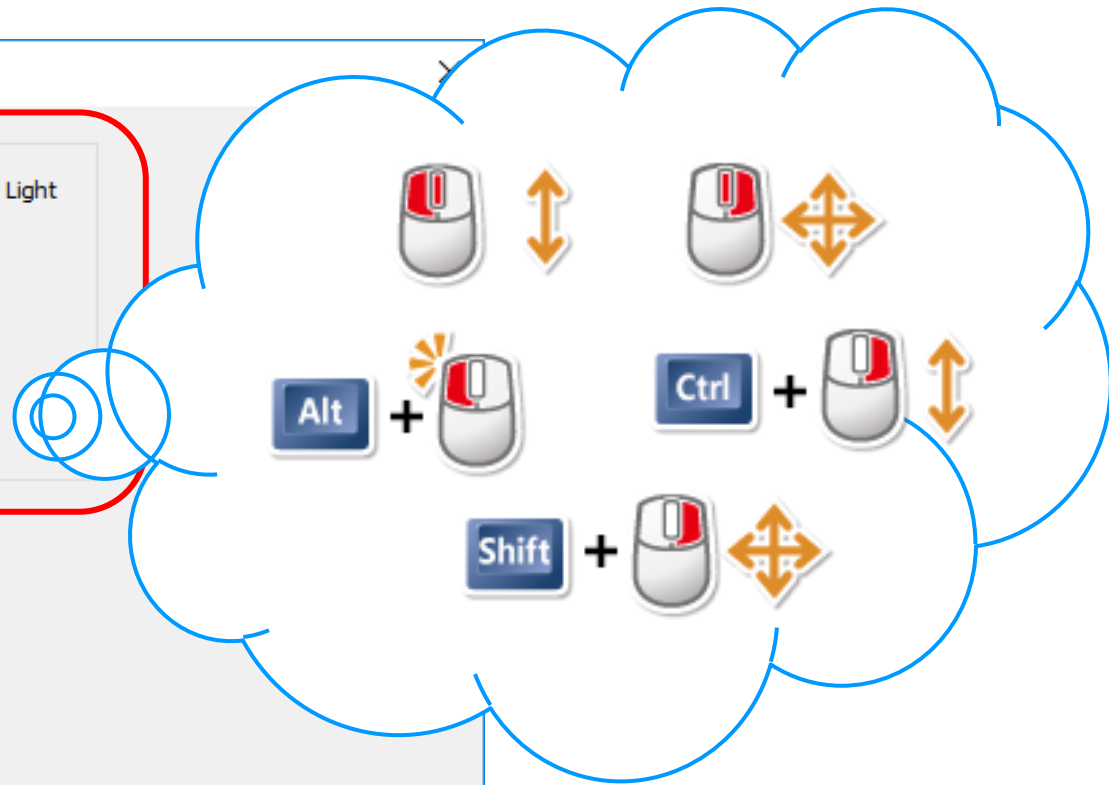
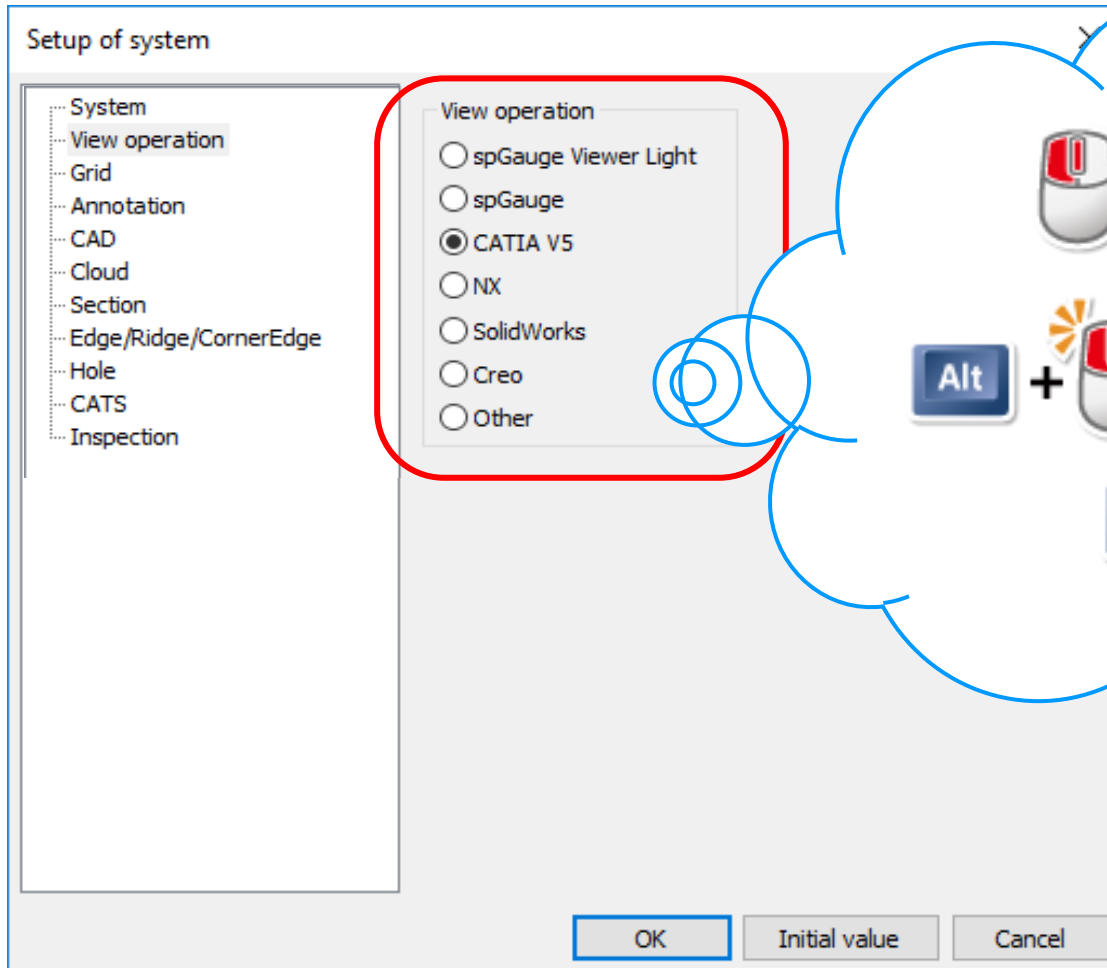
Corrected English expressions in menus, dialogs and messages.



15. spGauge Viewer Light: View operations

Added mouse view operation options in spGauge Viewer Light.

Menu **spGauge Viewer Light: [File]-[System Settings]**



✓ **Acceleration**

Shortened the processing time for several commands.

Accelerated compression/decompression time for gaugedsz file.

✓ **Welding point: Improved detection rate and extraction accuracy**

✓ **Welding point element IDs in tree**

IDs containing spaces can now be imported and registered from CSV.

✓ **[Edit]-[Select Object]: Tree synchronization**

Tree object is highlighted when a welding point is selected from the view.

✓ **Base Geometry in Group tab**

- ✓ Addressed the issue where geometry is not added under the Base Geometry in the Group tab, even after creating a Base Geometry.

✓ **Changing the work name after polygonization**

- ✓ Addressed the issue where spGauge was forced to terminate when a Work object was renamed after polygonization.

✓ **spGauge Viewer Light: Duplicated annotation**

- ✓ Addressed the issue where the same annotation is exported to spGauge Viewer Light twice.

✓ **System Requirements**

Support for Windows 8.1 has ended.



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