



**Elysium
InfiPoints®**



Elysium InfiPoints Operation Manual

Vol.4. Viewer Files Utilization

February 2023

Elysium Co. Ltd.

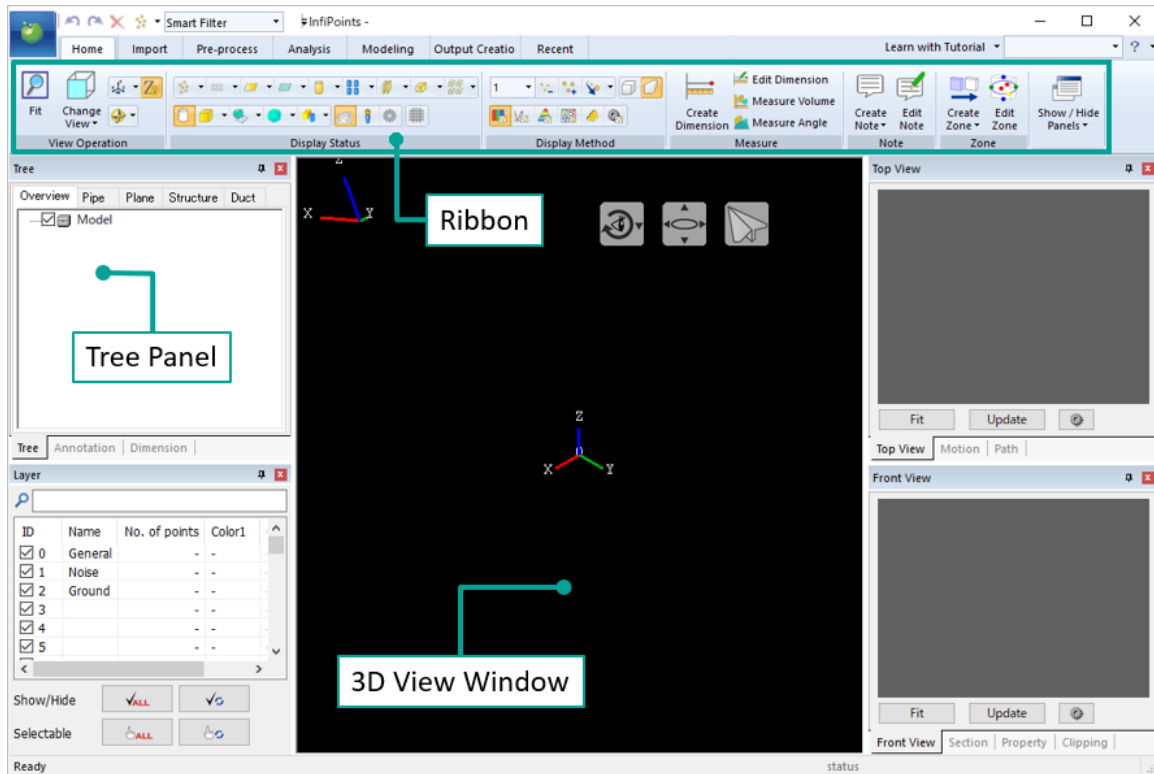
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1. View Operation

1.1. User Interface (UI)

Below is the UI of InfiPoints.

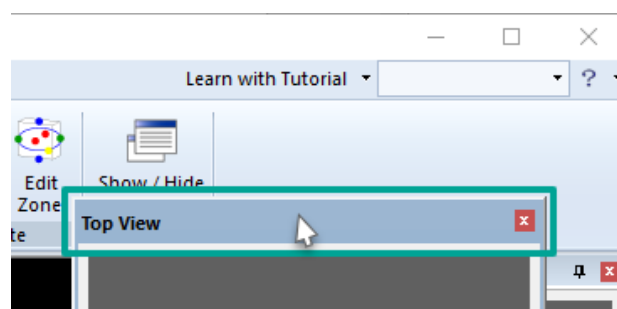


Ribbon	Displays useful icons for operation.
3D View Window	Canvas to display point clouds and CAD models
Tree Panel	Displays imported point cloud and related data (hidden in the screen shot above)

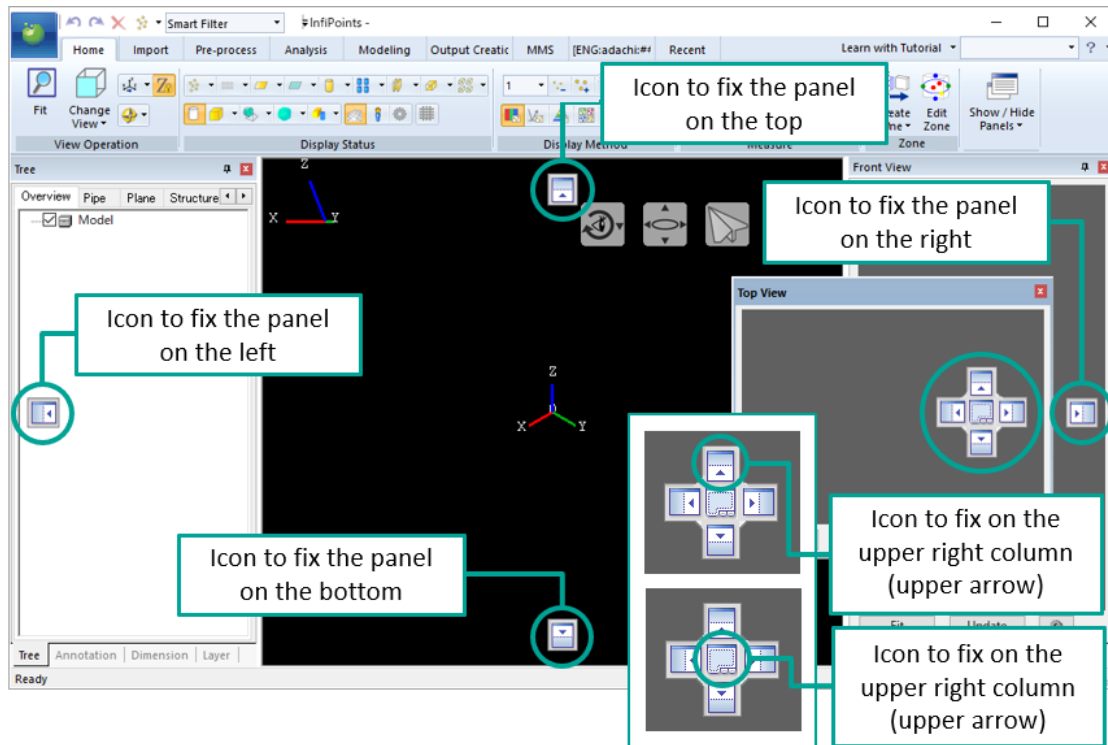
Use the [Show/Hide Panels] in the [Home] tab to show and hide panels ().

The layout of the UI can be easily customized as explained below.

1. Drag the upper part of the panel while left-clicking the mouse.



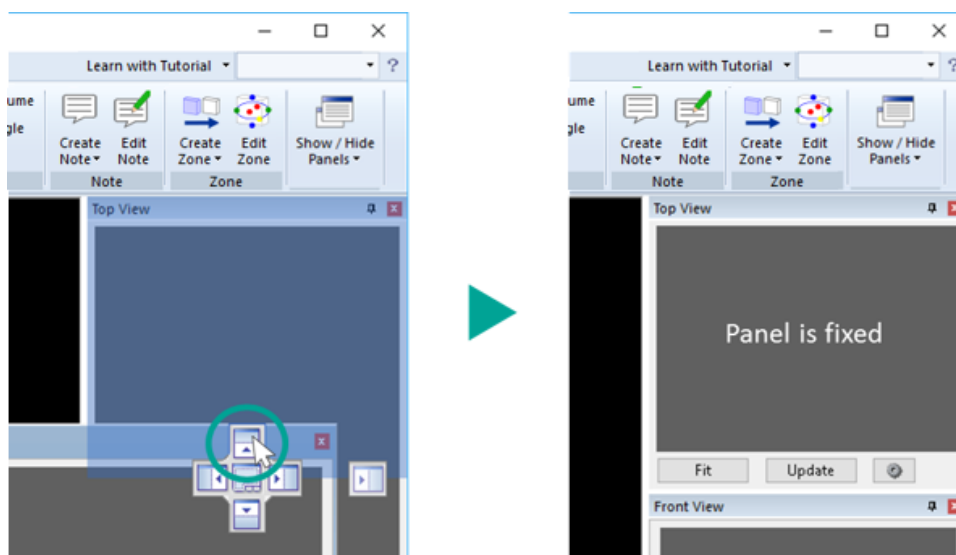
An icon to fix the panel will appear on each side of the screen.



2. Fix the position of a panel at the desired location by moving the cursor onto the icon.

(Ex.) Fixing the [Top View] panel at the top right column


1. Left-click at the upper part of the [Top] panel
2. Drag the panel to the icon (Area to be fixed will be highlighted blue)
3. Release left click




1.2. View Operation

1.2.1. Viewing Mode

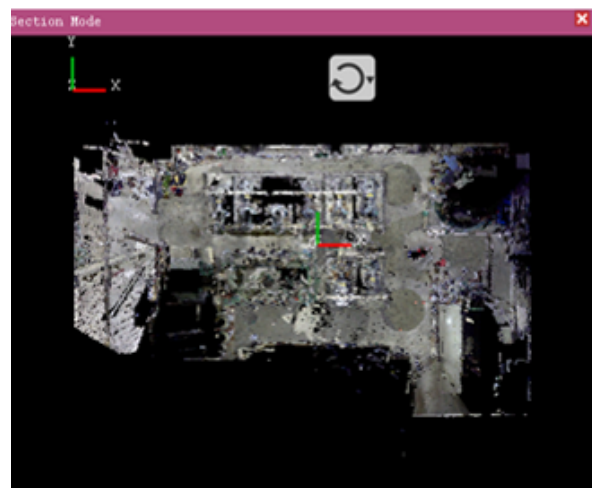
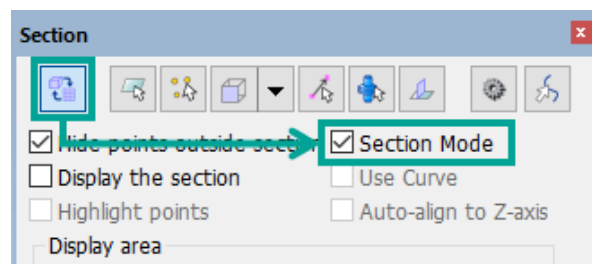
There are three viewing modes in InfiPoints.




- Normal Mode: 3D display / Move the view
- Fly-through Mode: 3D display / Move the viewpoint
- Section Mode: 2D display / View section from the front, or Clipping Box from the top/front
 - Pressing [Enable/Disable Fly-through View] () on the upper right corner of "3D View" window will switch to fly-through mode.



Fly-through speed can be changed using the [Display Speed Control] button().


















- When "Section Mode" is enabled in either [Section] panel or [Clipping] panel, the mode will switch to Section Mode.






Mode	Functionality	Type	Switching Icon
Default Mode	Movement by moving the model	Ortho Mode	
		Perspective Mode	
Fly-through View Mode	Movement by moving the viewpoint	Perspective Mode only	
Section Mode	Switch to 2D front view of the selected section	-	-

1.2.2. Mouse Operation

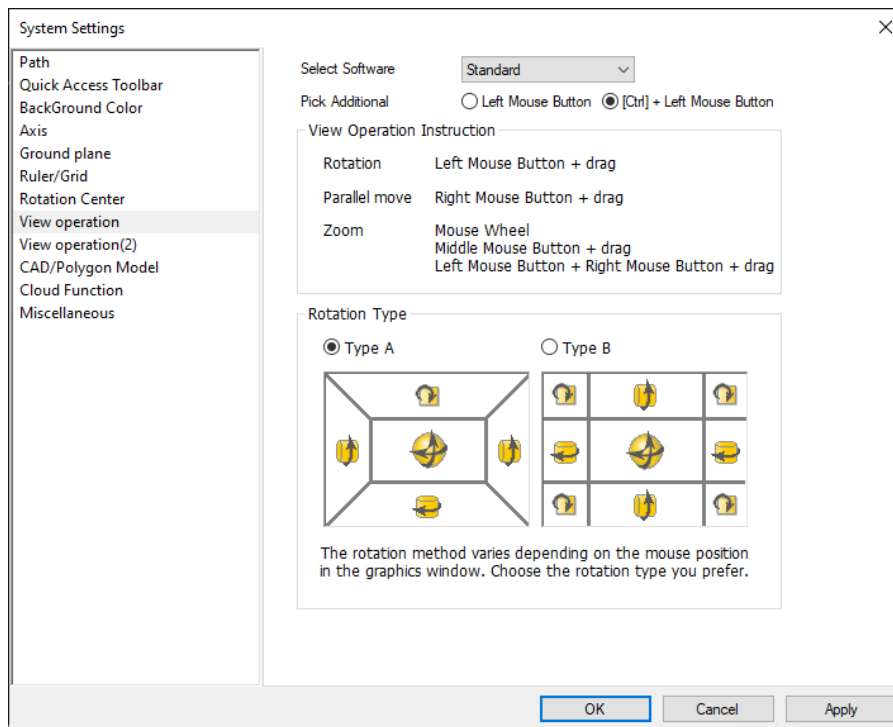
Operations below can be performed in the 3D View Window.

Function Name	Functionality	Default Mode	Fly-through Mode	Section Mode
Rotate 3D	Rotate the view by moving the mouse	 (Screen center)	 (Screen center)	-
Rotate 2D Z	Rotate model two dimensionally	 (window top)	-	-
Rotate 2D Y	Rotate model crosswise	 (window bottom)	-	-
Rotate 2D X	Rotate model endwise	 (window side)	-	-
Zoom in/out	Zoom the view with the mouse movement (Zoom will move forward and backward without changing the vertical direction height)			
Pan	Move model parallel			
Fix Rotation Center	Set the rotational center	[Ctrl]+ 	[Ctrl]+ 	[Ctrl]+ 
Pick				

Function Name	Functionality	Default Mode	Fly-through Mode	Section Mode
Pick Area		[Ctrl]+ 	[Ctrl]+ 	

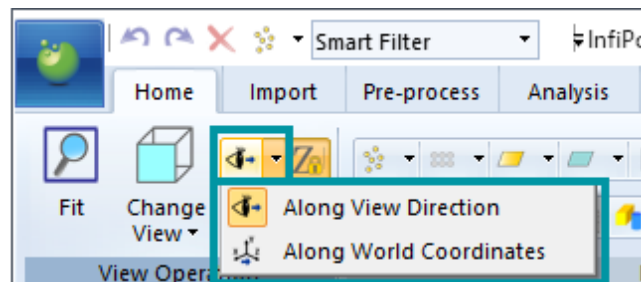




Select [Application Button] > [System Settings] > [View operation] to configure view operations other than the above.




■ Default Mode / Fly-through Mode

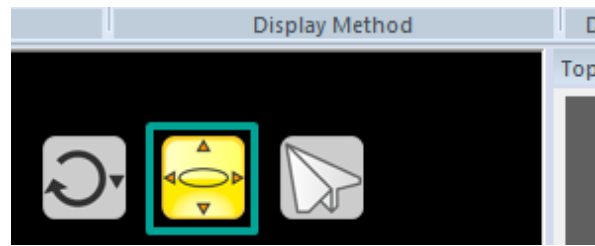
- Pan/Zoom direction can be changed in [Default Mode] and [Fly-through Mode].



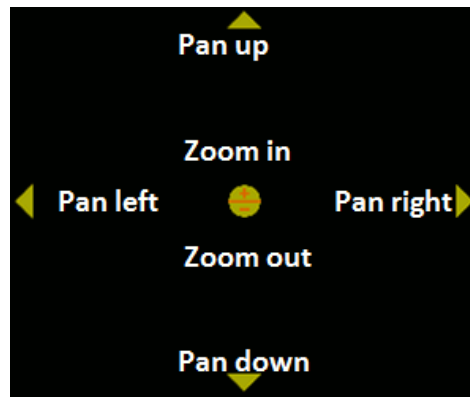
 Along View Direction	Pan/zoom " Along View Direction "
 Along World Coordinates	Pan/zoom " Along World Coordinates "

- Move with handle

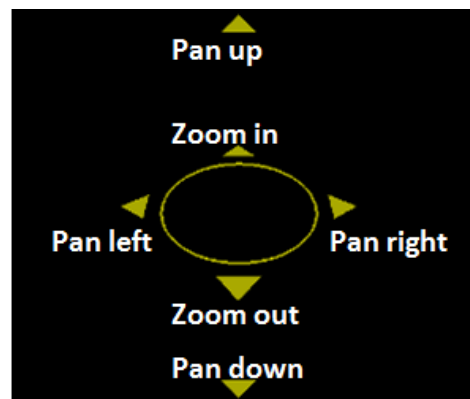
- Press [Show/Hide Handle for View Operation] () at the upper right of "3D View" window.



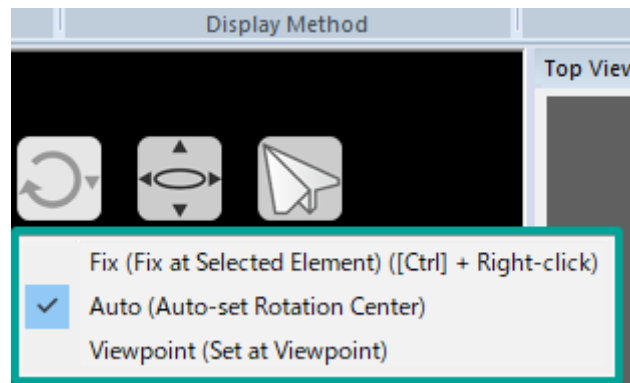
When "Along View Direction" is active






When "Along World Coordinates" is active





- Set Rotation Center
 - Specify the rotation center in "3D View" window.
 - Press [Fix Rotation Center] () at the upper right of "3D View" window.



 Fix (Fix at Selected Element) ([Ctrl] + Right-click)	Set the selected object at the rotation center
 Auto (Auto-set Rotation Center)	Automatically set the rotation center at the center area of the 3D View Window
 Viewpoint (Set at Viewpoint)	Set rotation center at viewpoint

■ Section mode

Function	Overview	Section mode
 Zoom	Move forward / backward at the same height	Drag the mouse while holding down both L + R buttons; drag the mouse cursor downward to zoom in, and upward to zoom out.
 Pan	Pan left / right / up / down	Drag the mouse while holding down R button.



- Purple bar is displayed at the top of "3D View" window when you are in Section Mode.



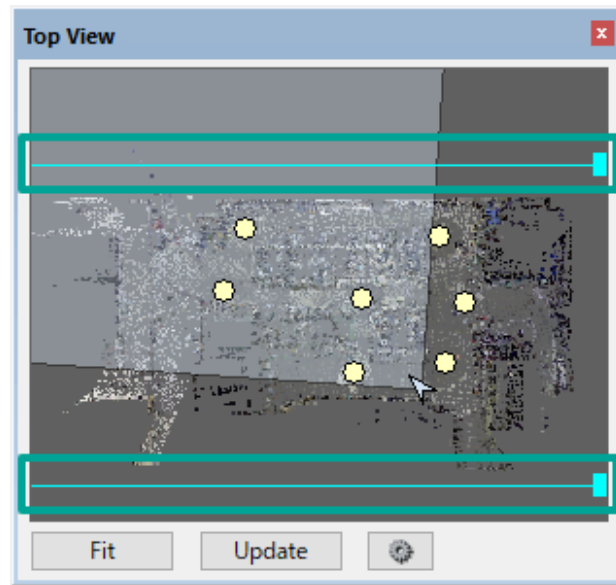
- Please note that 3D rotation is not available in Section Mode.

1.2.3. View operation in 2D layout View

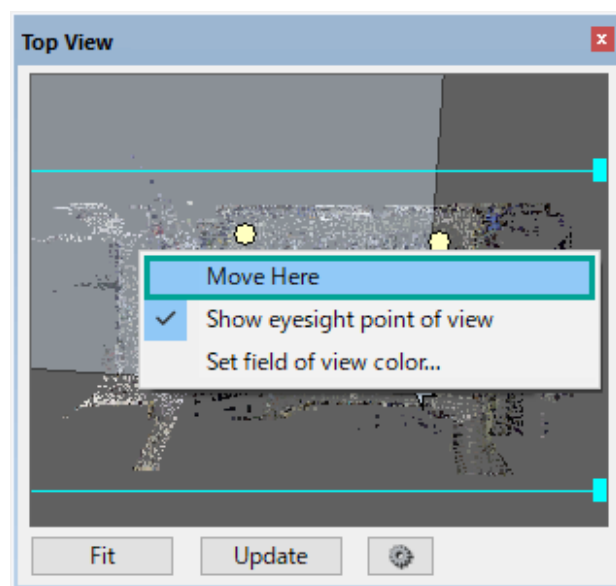
Below shows some useful functions to utilize [Top View] / [Front View] panels.

- Display Range
Move the light blue lines dragging handles on the right to control the view range in [Top

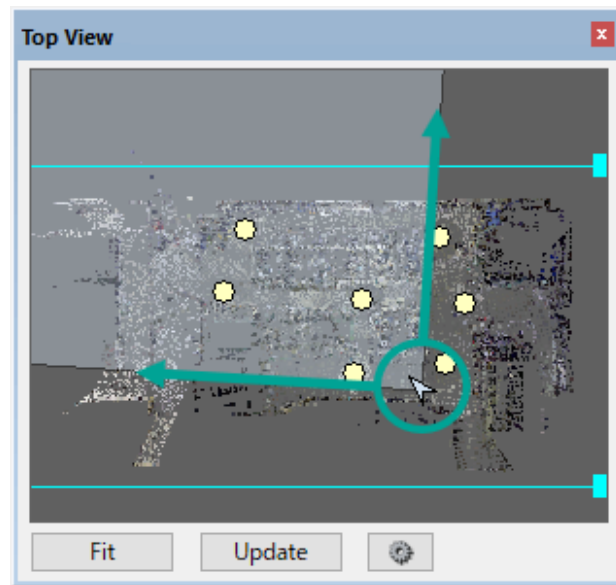
View] / [Front View] panel. This is effective when registering shots by moving/rotating shots in [Top View] / [Front View] panel.



- The display range of [Top View] / [Front View] panel will be updated as you move the blue lines.
- Move blue lines in [Top View] panel to adjust the display range of [Front View] panel, and blue lines in [Front View] panel to adjust [Top View] panel.
- View Operation
Move the mouse wheel forward / backward in [Top View] / [Front View] panel to zoom in / out the 2D layout image. And drag while holding down the right-mouse button to pan (move the 2D layout image parallel).
- Viewpoint
Select [Move Here] from the context menu to move the viewpoint to where you clicked.




- An arrow in [Top View] panel shows the viewpoint, and the sector shows the field of view, and the yellow points show the scanner position.

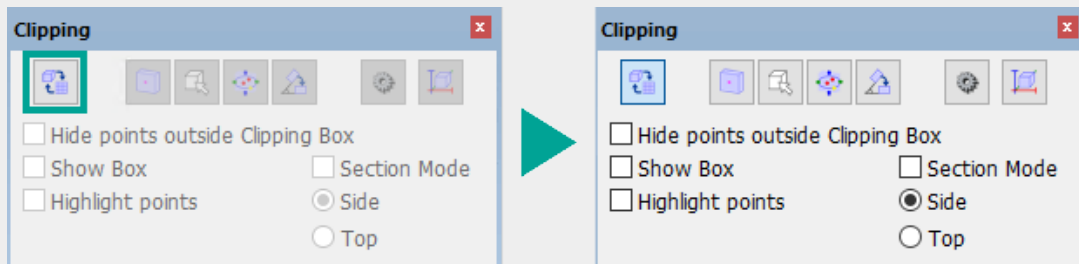


1.3. Viewing within Clipping Box

Users can specify a view area in the point cloud by creating a rectangular solid. This rectangular solid is called Clipping Box. Users can view data within the Clipping Box or highlight point clouds inside the box.

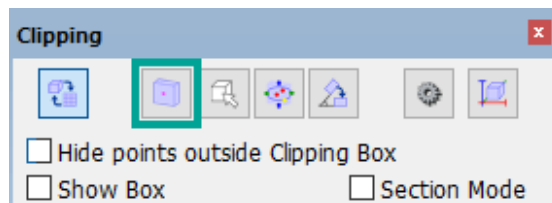
Preparing to Create Clipping Box

If the buttons on [Clipping] panel are inactive, activate them by pressing [Switch Mode: Clipping/Section] () in the upper left of [Clipping] panel.

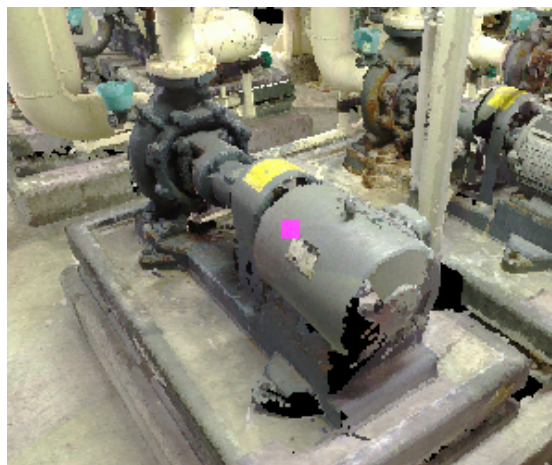


Clipping Box and Section cannot be used at the same time.

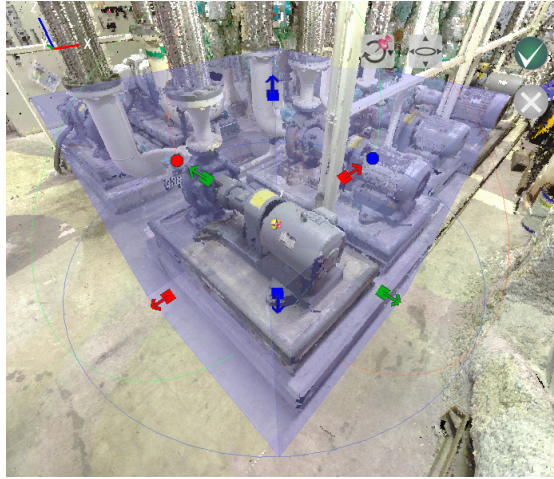
1. In [Clipping] panel, press [Create Clipping Box] ().



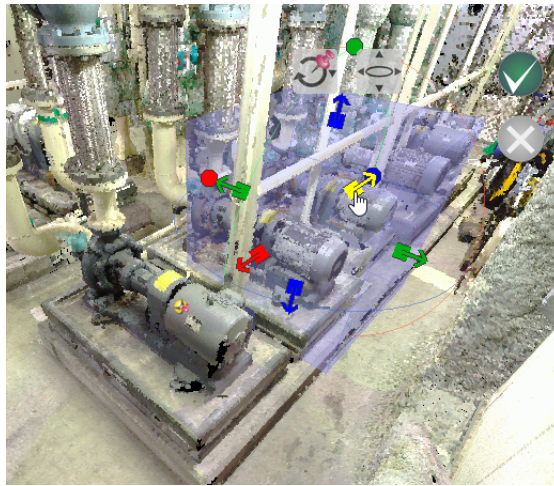
2. Pick a point on the screen to select an area to clip out.



A blue rectangular solid with the selected point in the center appears.

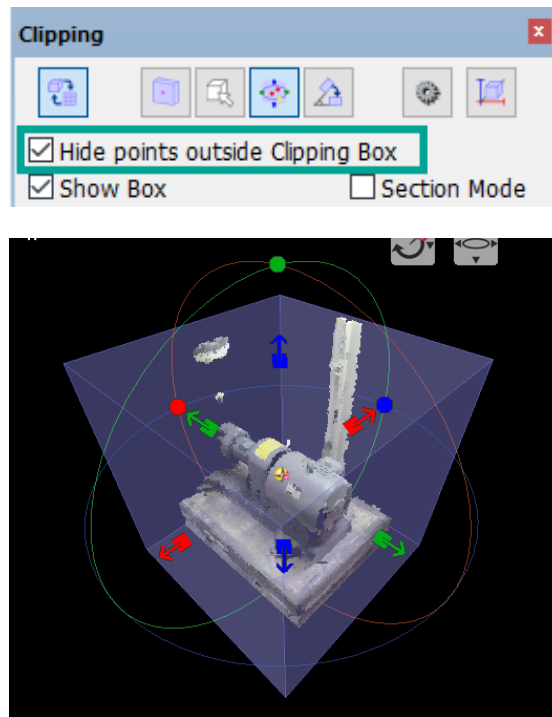


3. Change the size of the Clipping Box by dragging the handle that appears around the Clipping Box while clicking and holding.



Right-click and drag the handle with the mouse to parallel move the Clipping Box without changing the size.

4. When enabling "Hide points outside Clipping Box" in [Clipping] panel, only the elements inside the Clipping Box are displayed.



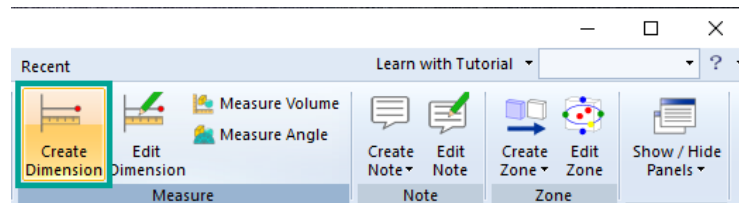
2. Simulation

2.1. Setting Dimension

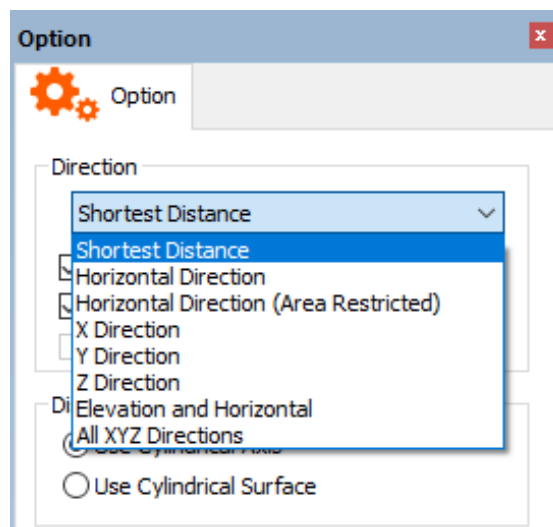
Users can virtually measure dimensions using point cloud data without going on-site. Therefore, taking measurements of unsafe locations and heights will not be a problem using InfiPoints.

2.1.1. Creating Dimension

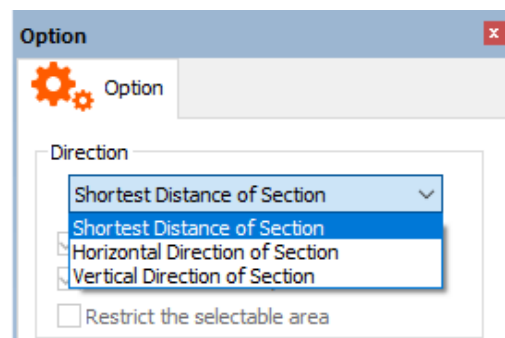
1. Select [Home] tab > [Create Dimension] () from the Ribbon menu



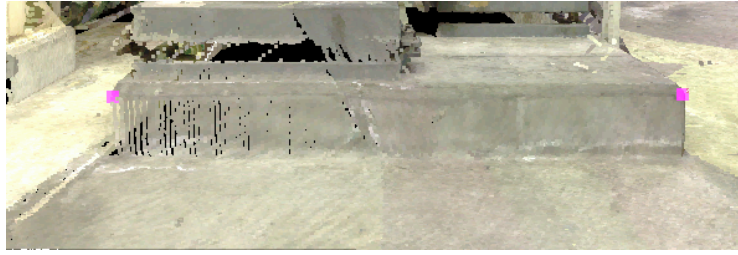
2. [Option] panel will appear. In this case, select "Shortest Distance".



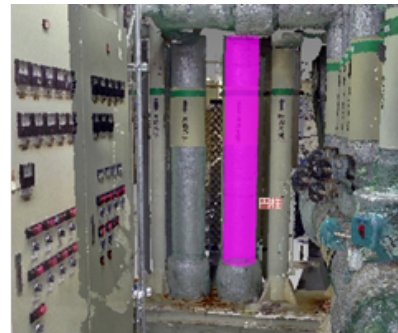
Please note that if "Section Mode" is enabled in [Section] panel, the following "Option" dialog will appear.



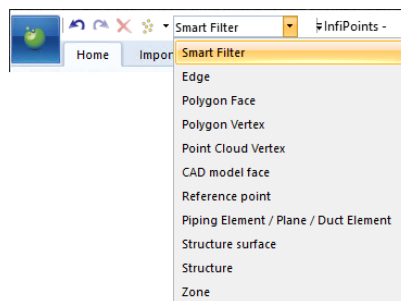
3. Pick the starting and ending point of measurement.



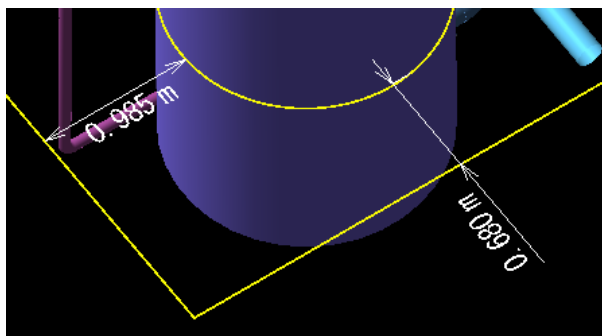
If pipes/planes are already extracted, candidates near the mouse cursor will be highlighted.



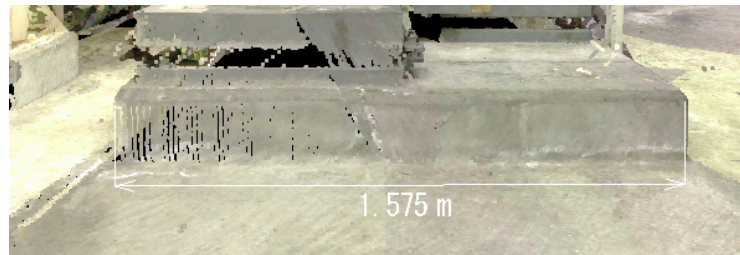
Users can use the [Smart Filter] to select certain elements such as pipes/planes.



It is not possible to specify 2D drawing elements as selection targets; however, if you generate point clouds from 2D drawings, you can specify them as selection targets (point cloud vertices). Please refer to "[Generating point cloud from 2D drawing](#)" for details about generating point cloud from drawing.



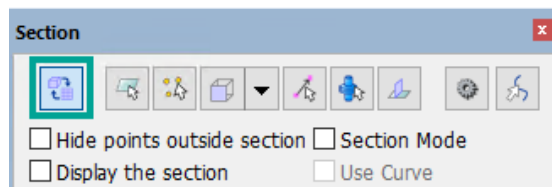
- The dimension will appear when the starting and ending points are selected.
Users can choose where to locate the dimension annotation when clicking in a selected area.



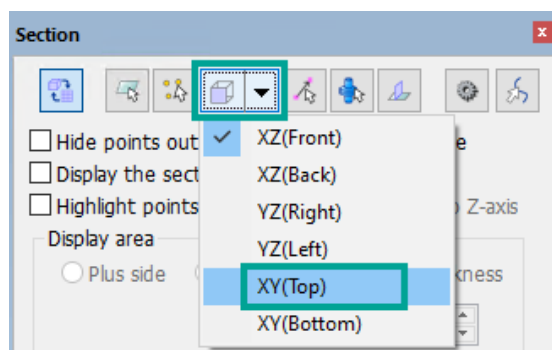
2.1.2. Creating Dimension (Section Mode)

Users can measure as if on a 2D drawing when viewed from a selected section.

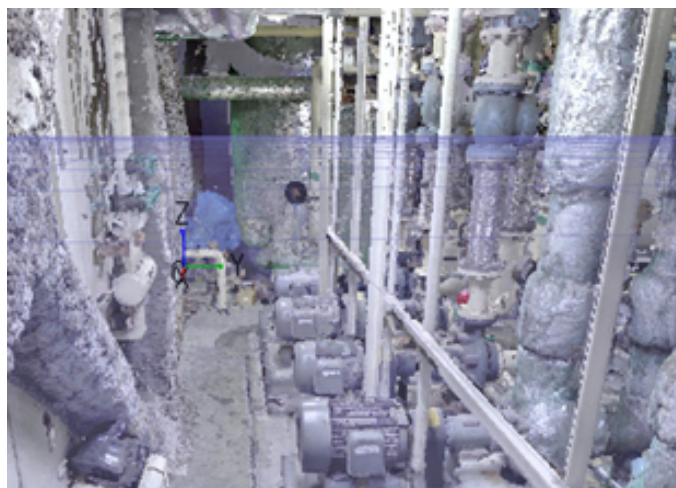
- In [Section] panel, press [Switch Mode: Clipping/Section] () to enable the Section mode.



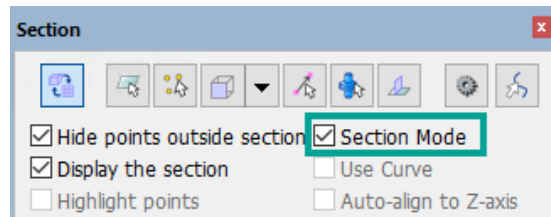
- Select the direction of section. In this case, select "XY (top)" to set the horizontal section.




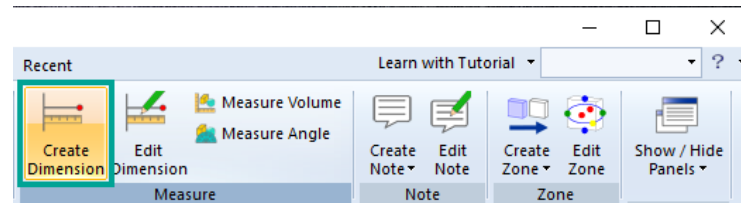
- Select the location for cross-section in the 3D View Window. A cross-section which passes through the selected point will be created.



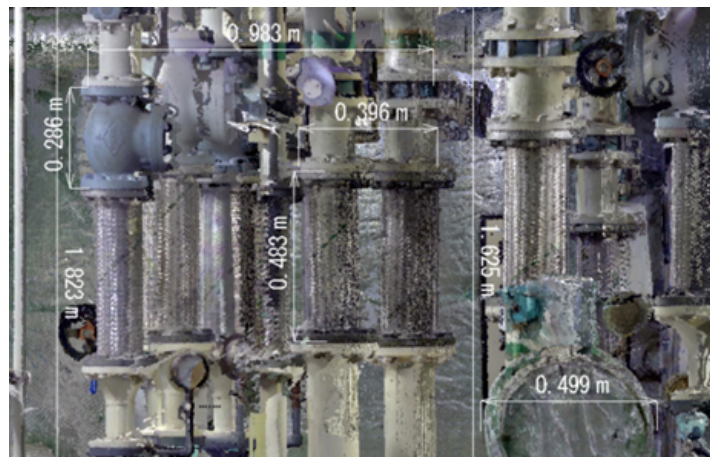
4. In [Section] panel, enable "Section Mode".



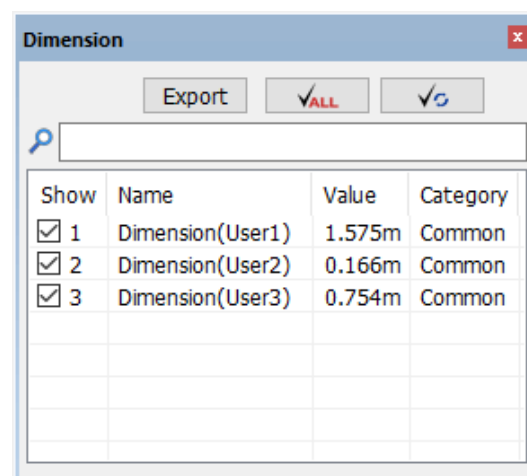
5. Select [Home] tab > [Create Dimension] () from the Ribbon menu to measure a certain location.



- An example of a dimension viewed from a section



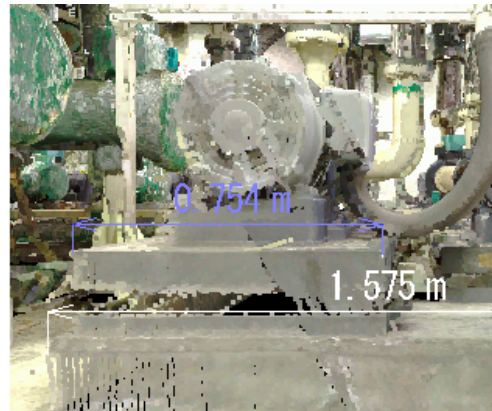
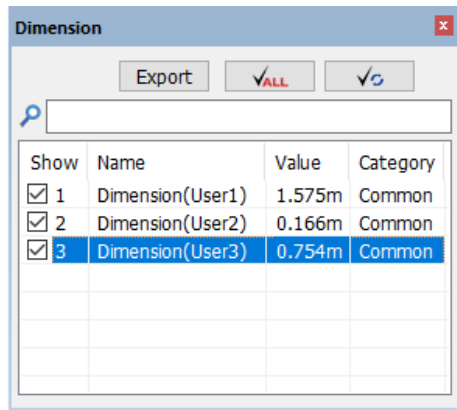
Created dimension can be checked in the [Dimension] panel.



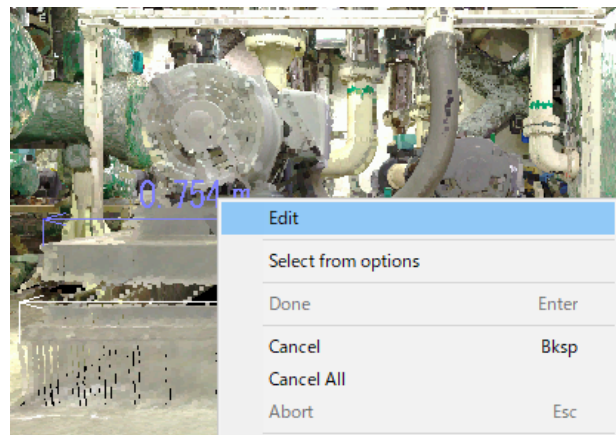
2.1.3. Editing Selected Dimension

1. Pick the dimension to edit on "3D View" window.

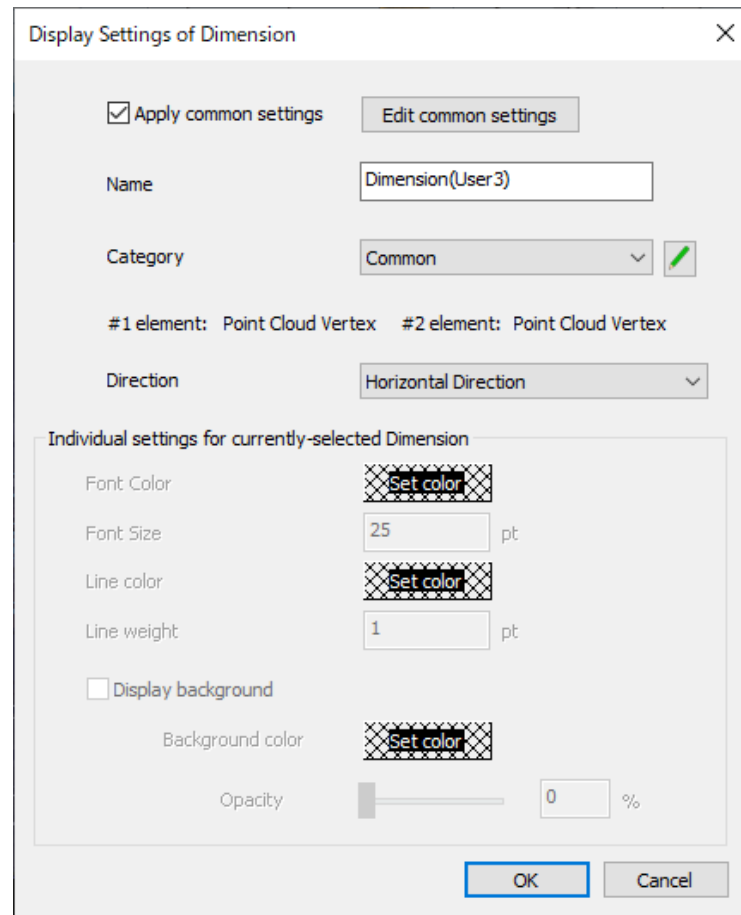
[Dimension] panel will appear, and the dimension you picked will be highlighted.



2. Right-click on "3D View" window, and select "Edit" from the context menu.

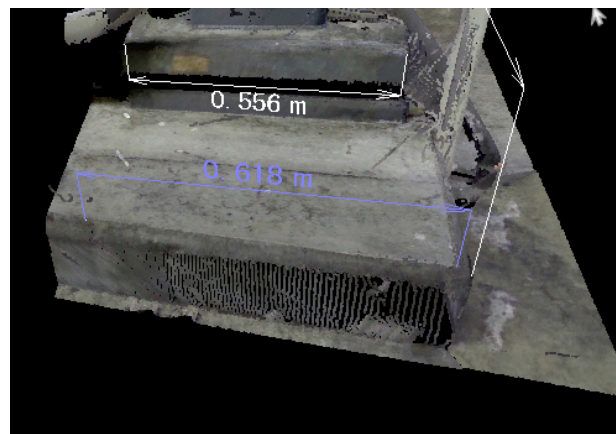


- "Display Settings of Dimension" dialog will appear. Edit the name and format of the dimension, and then click [OK].

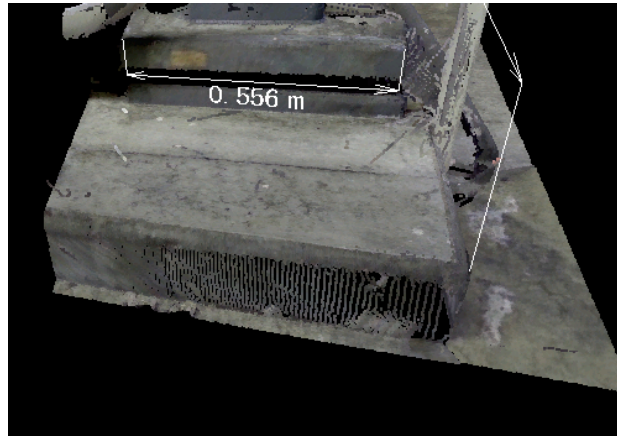


2.1.4. Deleting Selected Dimension

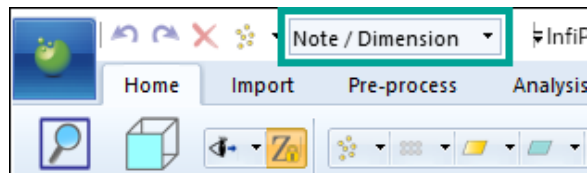
- Select note(s) and dimension(s) to delete in 3D View Window.
[Dimension] panel will appear and selected dimension will be highlighted.



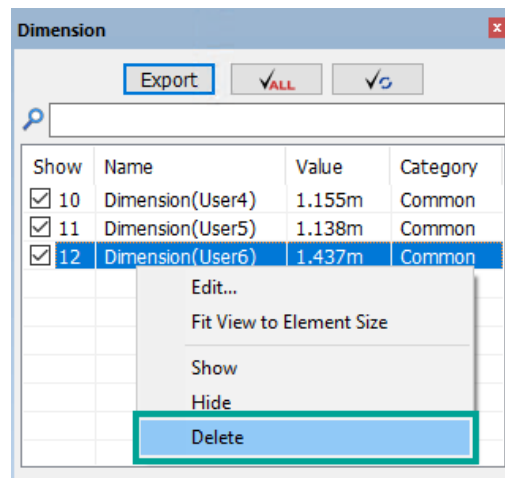
- Select [Delete the selected elements] () from the quick access tool bar or select [Delete] to delete the selected dimension.



- Other elements may be prioritized for the selection when there are other elements near the dimension or note to move. Utilize [Smart Filter] in the toolbar to make only "Note / Dimension" selectable.




- Multiple selection is available.
 - Select elements while holding down [Ctrl] key to multiselect.
 - Drag the mouse while holding down [Ctrl] key to select by a rectangular area. (Drag without holding down [Ctrl] key if you are in "Ortho" mode)
- Another possible way to delete a dimension is to right-click while the dimension is selected in [Dimension] panel, and then click "Delete" from the context menu.

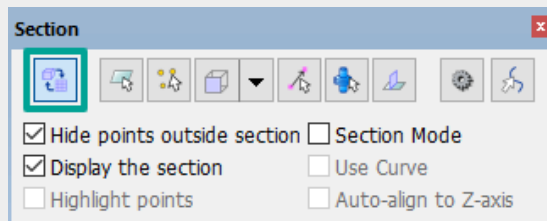


2.2. Creating 2D Drawings

You can create 2D drawings with InfiPoints. Followings are the instruction on how to create a 2D drawing at the position of the section.

Preparing for Creation of 2D Drawings


- 2D drawing is created at the position specified by the section or Clipping Box.
 - Enable the [Section] panel by selecting [Switch Mode: Clipping / Section] () if you want to create 2D drawings by using the section. Also, if you want to create 2D drawings by using the Clipping Box, enable the [Clipping] panel.

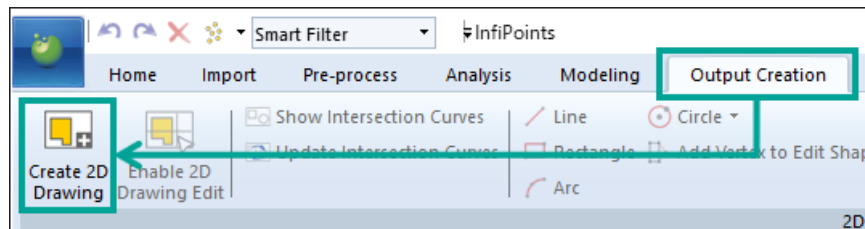


- Please refer to "Create Section" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization: Simulation & Data Utilization" for ways to create a section.
- Please refer to "Create Clipping Box" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization: Simulation & Data Utilization" for ways to create a Clipping Box.



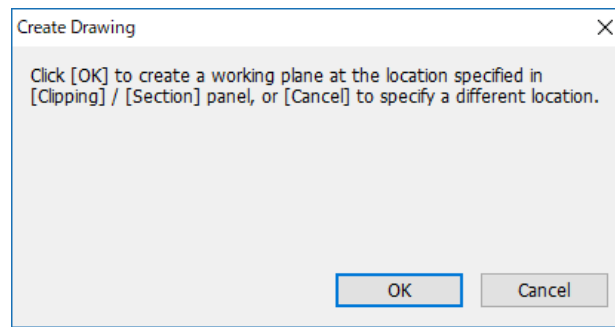
You cannot use [Section] panel and [Clipping] panel at the same time.

1. Select [Output Creation] tab > [2D Drawings] > [Create 2D Drawing] () from the Ribbon menu.

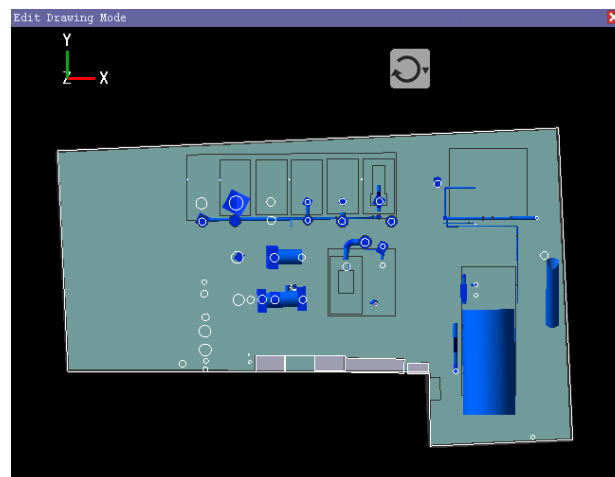


Please enable the [Section] panel when creating the 2D drawing.

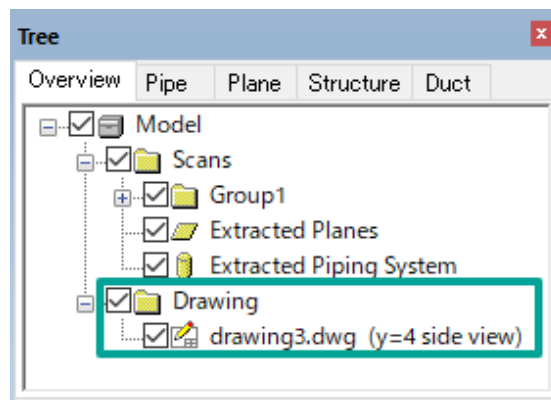
2. On "3D View" window, a preview of where the drawing will be created is displayed. In "Create Drawing" dialog, click [OK].



Edit Drawing Mode is automatically enabled and 2D drawing which includes intersection curves with planes and pipes is created at the position where the section was created.



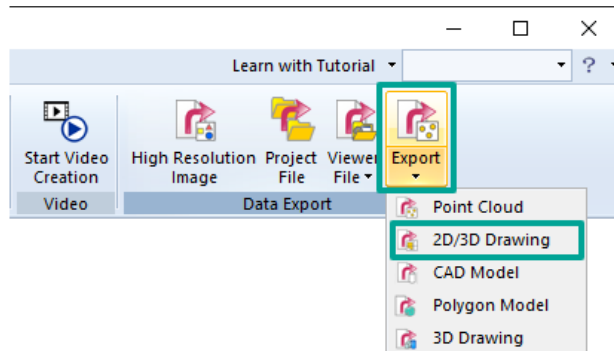
A [Drawing] folder will be added to the [Tree (Overview)] panel.



2.3. Exporting as 2D Drawings

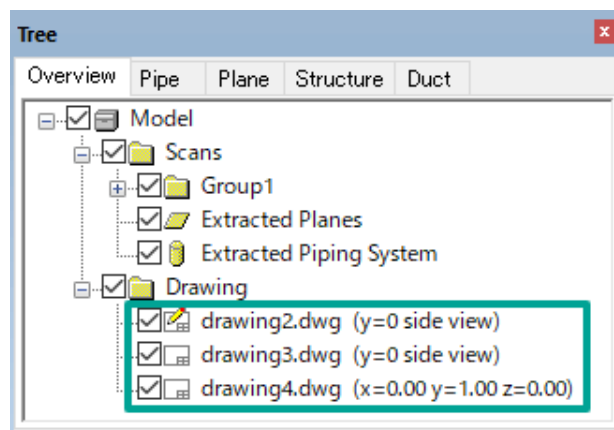
InfiPoints can create drawings, and export them as 2D drawing data (DWG/DXF formats) and background image data (PNG format). Exported background image data (PNG) can be used as an image to be placed in the background for AutoCAD and BIM softwares.

1. Select [Output Creation] tab > [Export] > [2D/3D Drawing] () from the Ribbon menu.

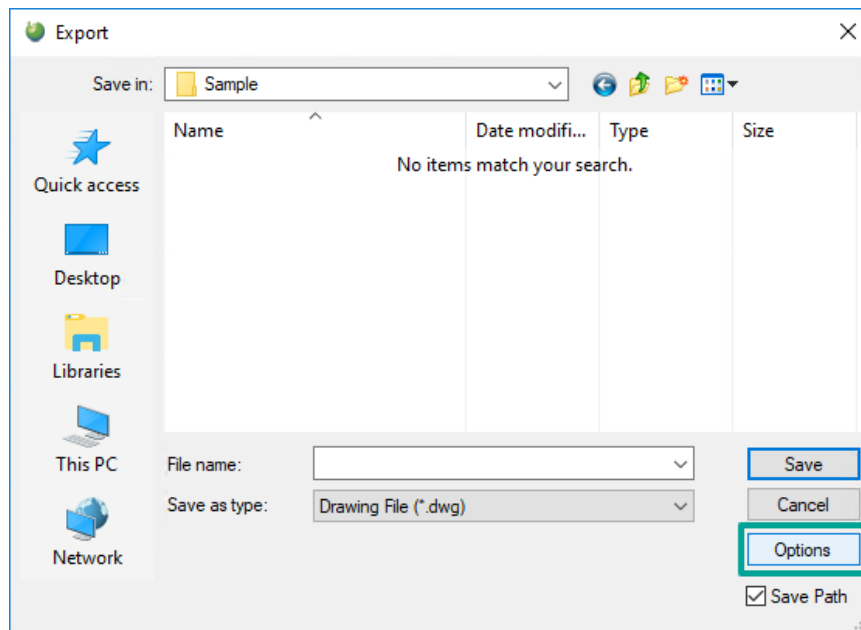


Only when "Edit Drawing Mode" is enabled, 2D drawing data (DWG/DXF formats) and background image data (PNG format) are exported. When executing "Normal mode", only the drawing data (DWG/DXF format) is exported.

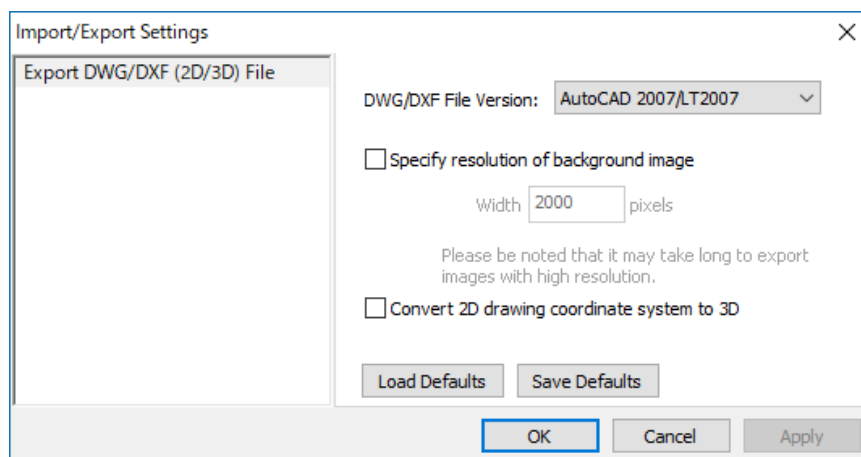
2. Select the 2D drawing to be exported from the [Tree (Overview)] panel when multiple 2D drawings are in the panel.



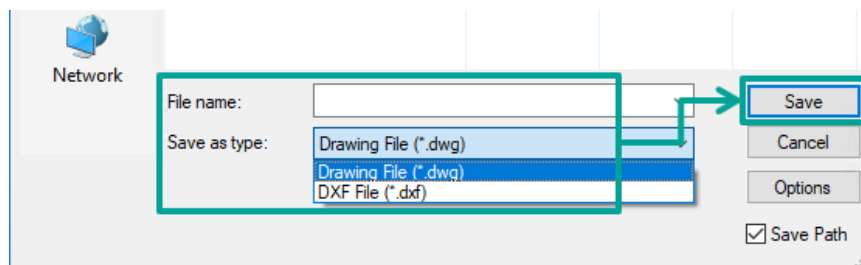
3. "Export" dialog will appear.



Click [Option] to display "Import/Export Settings" dialog.
Set options and click [OK].



- In "Export" dialog, specify folder path to save, file name, and file type of 2D drawing, and click [Save]. 2D drawing file and background image will be exported.



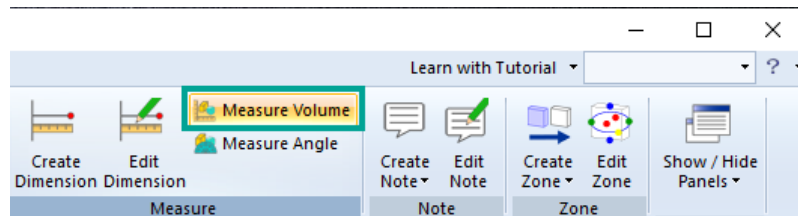
When exporting the background image, always use "Edit Drawing Mode".


3. Measuring

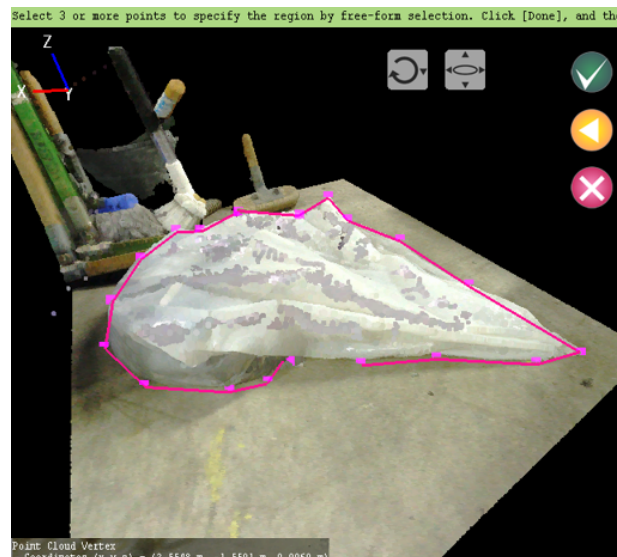
3.1. Measuring Volume and Surface Area


Measure the volume, surface area, and base area within the specified range.

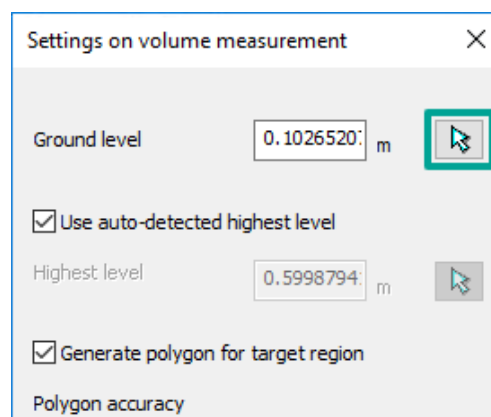
1. Select [Home] tab > [Measure] > [Measure Volume] ().



2. Pick to enclose the area you want to measure on "3D View" window, and then press [Done] ().



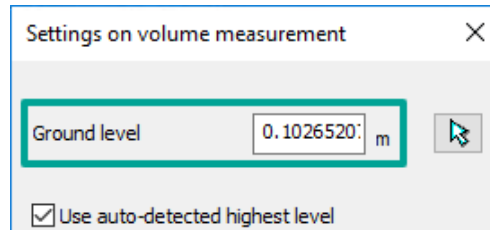
3. The setting dialog will appear. To specify the location of the ground which will be the basis of measurement, select  at the right side of "Ground level".



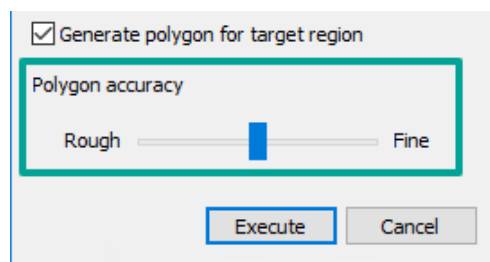
Specify a point at the base ground position on "3D View" window.



The Z coordinate value of the picked point is automatically set as "Ground level".

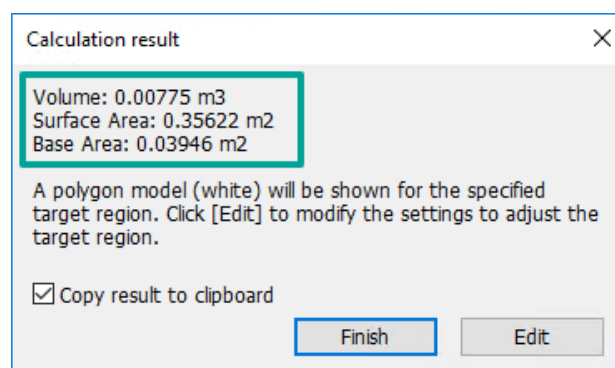


4. Adjust "Polygon accuracy", and click [Execute].

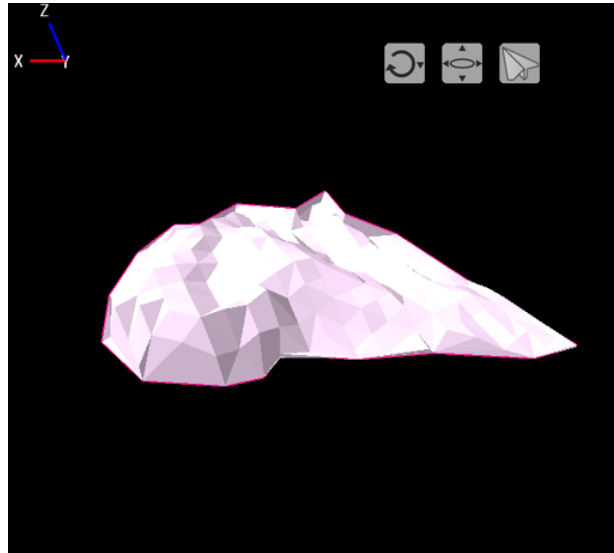


When the polygon model is not to be left after measurement is performed, disable "Generate polygon for target region".

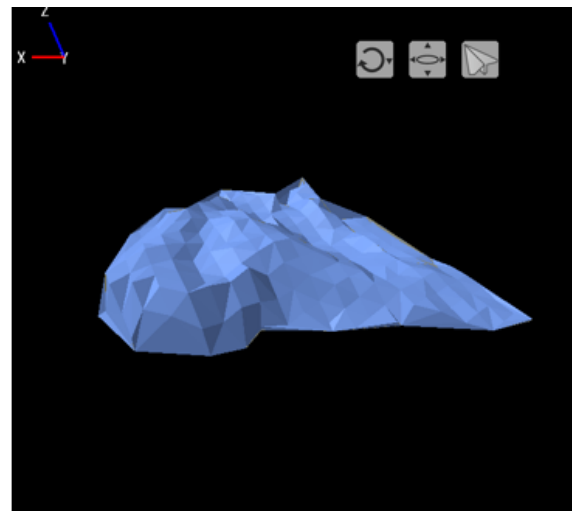
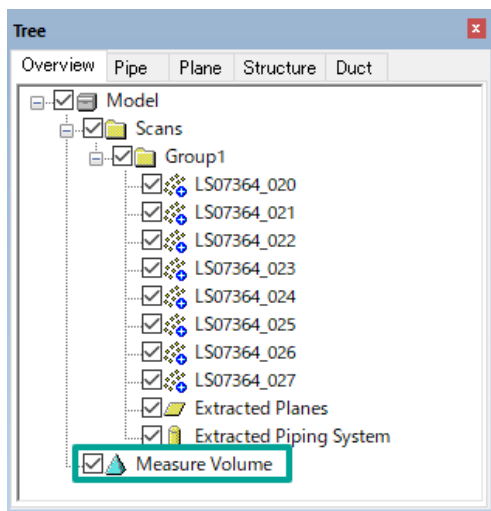
5. A result dialog will appear. Confirm the volume, surface area, and base area.



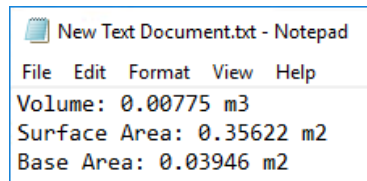
6. A polygon model is temporarily created on "3D View" window.



7. Click [Yes] in the result dialog to save the polygon model.



When enabling "Copy result to clipboard", you can paste the measurement result to Notepad, etc.

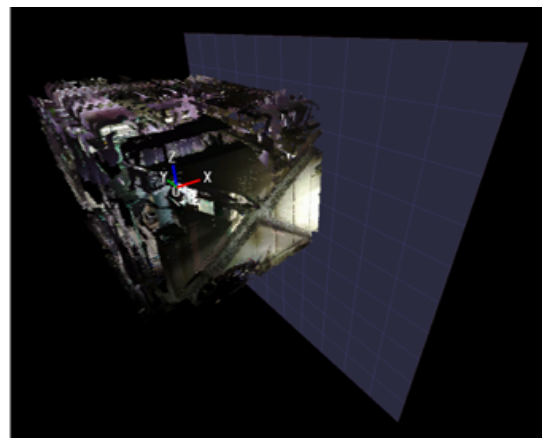
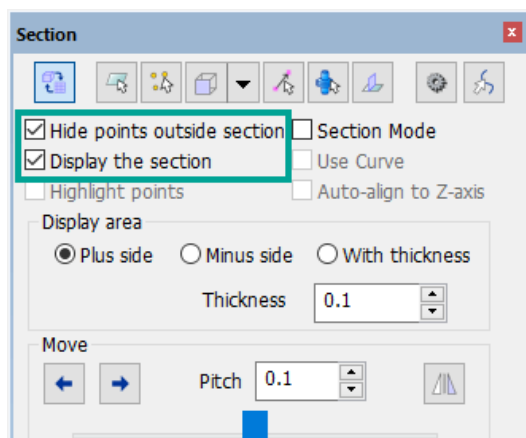


3.2. Measuring the Side Volume

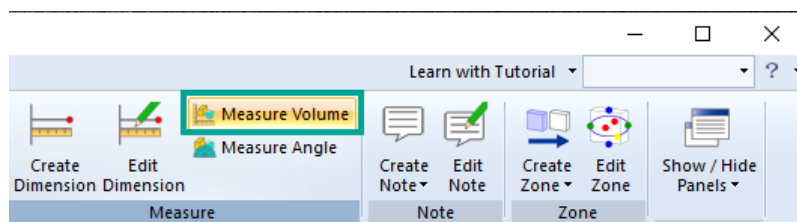
As shown in the figure below, this function measures the volume, surface area, and base area of a region extruded from a specified range to a specified section.




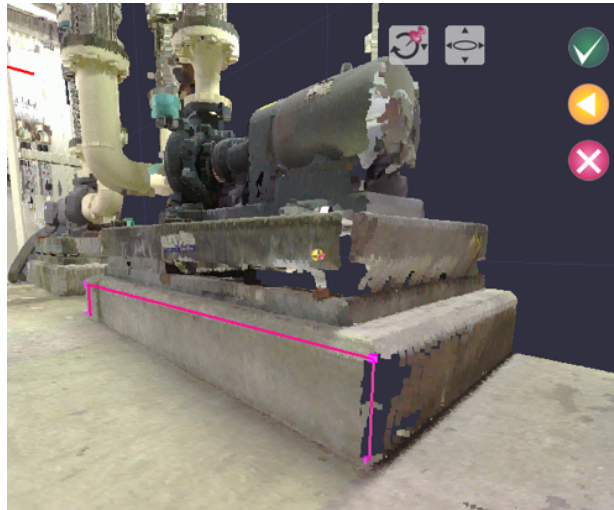
1. On "3D View" window, set the section.



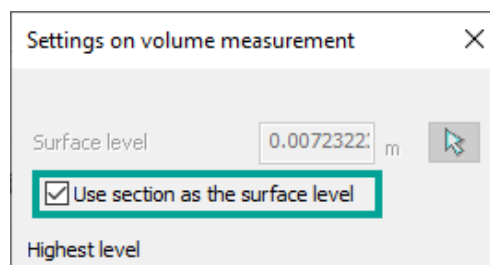
2. Select [Home] tab > [Measure] > [Measure Volume] ().



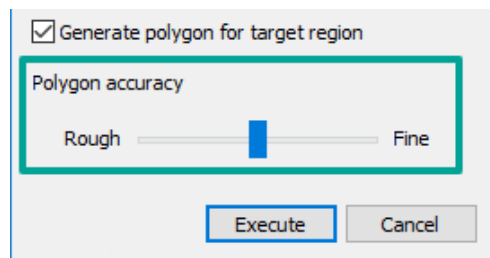
3. Pick to enclose the area you want to measure on "3D View" window, and then press [Done] ().




4. "Setting on volume measurement" dialog will appear. Enable "Use section as the surface level".

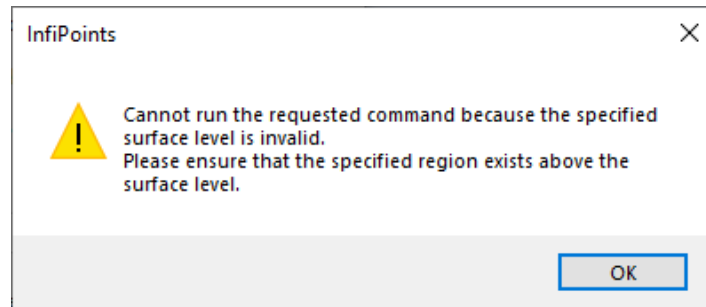


Adjust "Polygon accuracy", and click [Execute].

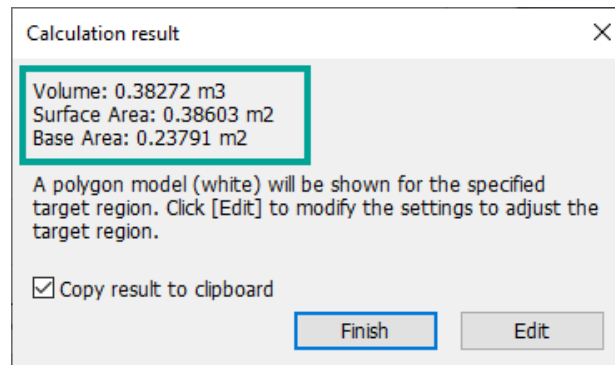


When the polygon model is not to be left after measurement is performed, disable "Generate polygon for target region".

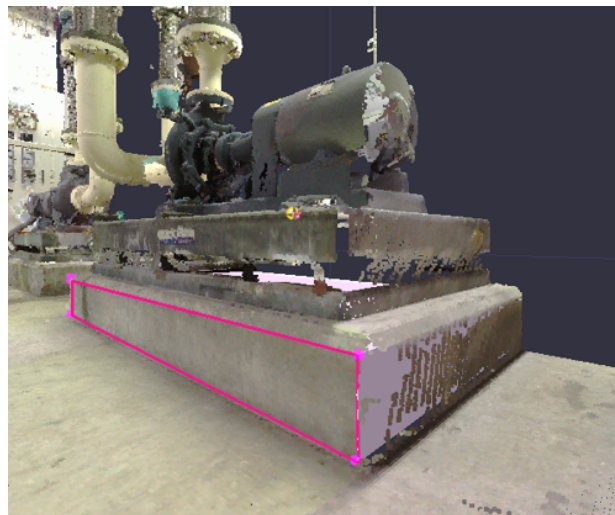
Please note that if the orientation of the section is incorrect, the following dialog will appear. In [Section] panel, press [Switch the Orientation (Plus/Minus) of Section] () to flip the orientation of the section, and then click [Execute] again.



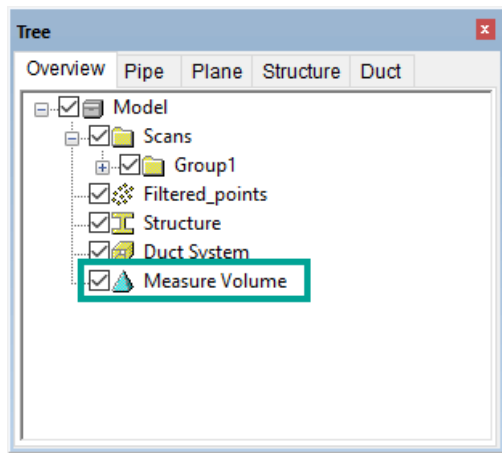
5. A result dialog will appear. Confirm the volume, surface area, and base area.



A polygon model is temporarily created on "3D View" window.



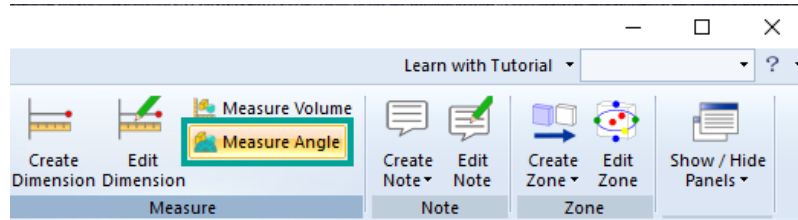
6. Click [Finish] in the result dialog to save the polygon model.



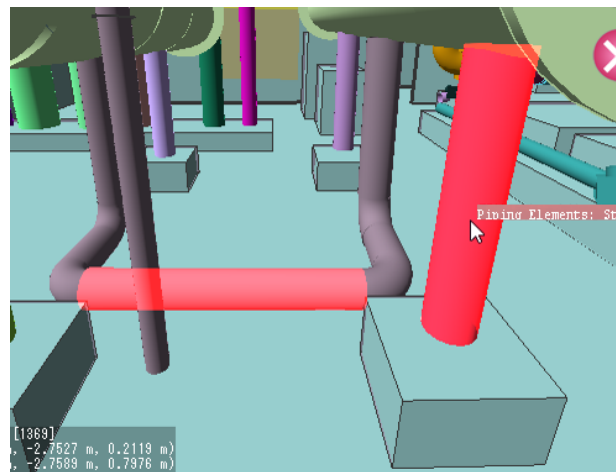
3.3. Measuring Angle

Specify a plane, a straight pipe, or three points on "3D View" window, and measure the angle between the same type elements.

1. Select [Home] tab > [Measure] > [Measure Angle] ().

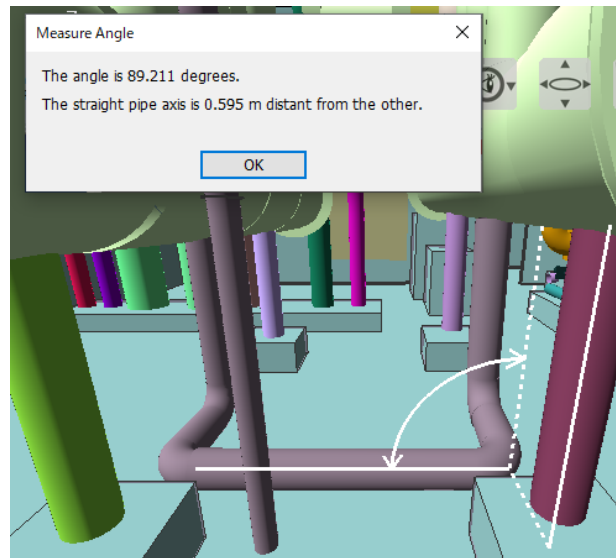


2. Specify the target elements (plane, pipe, or among 3 points) on "3D View" window.
To measure the angle of pipes, select two pipe elements (straight pipes) on "3D View" window.

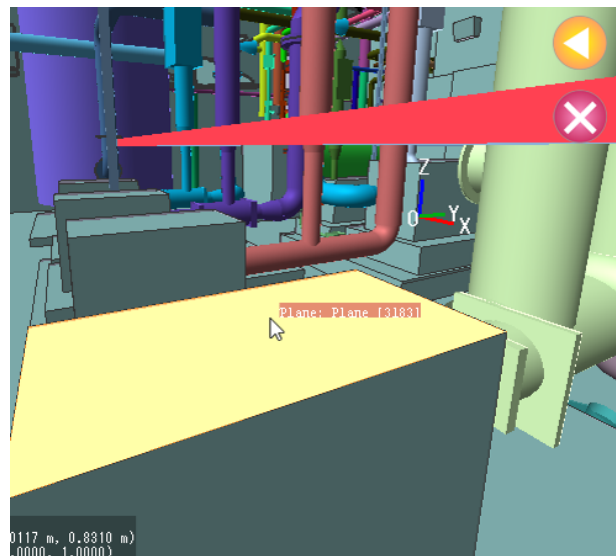


"Measure Angle" dialog and a preview of the measured position will appear on "3D View" window.

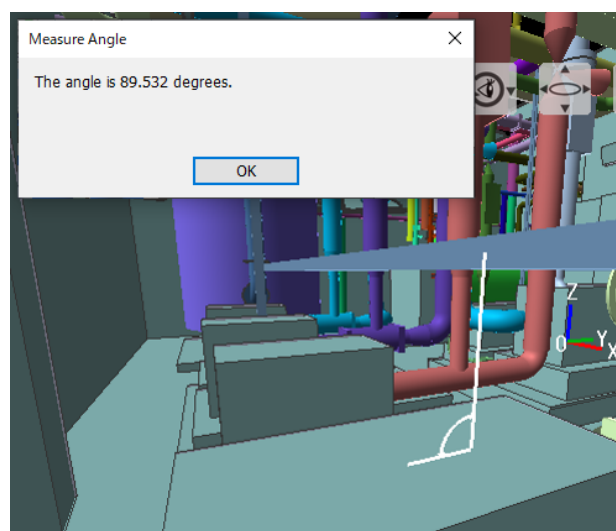
In "Measure Angle" dialog, you can confirm the angle and the deviation of the axes of the two straight pipes.



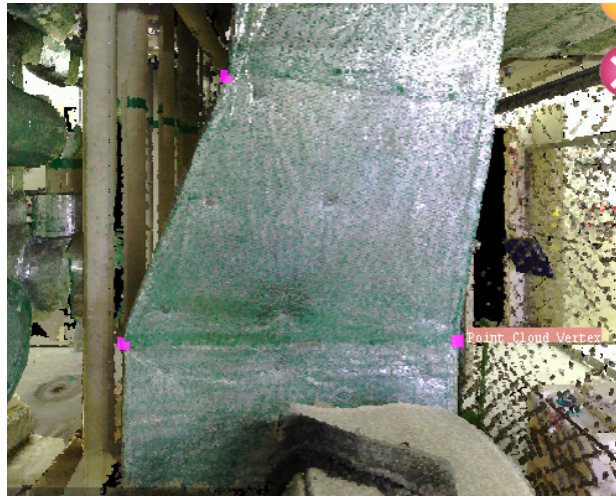
3. To measure the angle of a plane, select two of the same type element from either a plane element, CAD modeling face (plane), or a structural face on "3D View" window.



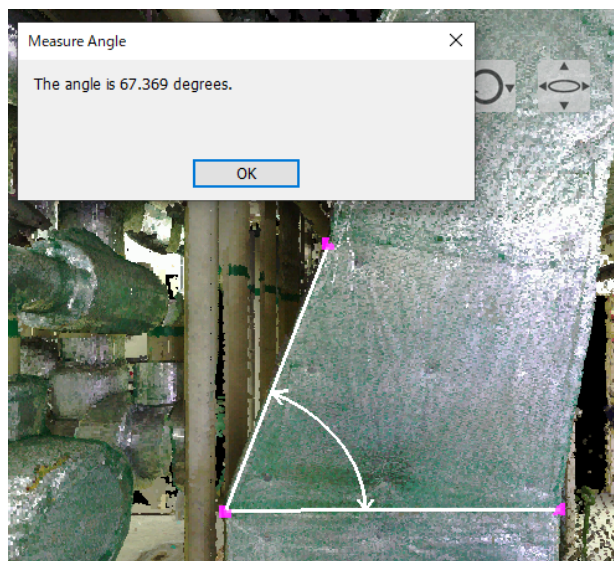
"Measure Angle" dialog and a preview of the measured position will appear on "3D View" window.



4. To measure the angle among 3 points, select any 3 points among the cloud vertices and reference points on "3D View" window.



With a straight line, connect #1 and #2 point, then #2 and #3. Measure the created angle between these two straight lines. "Measure Angle" dialog and a preview of the measured position will appear on "3D View" window.

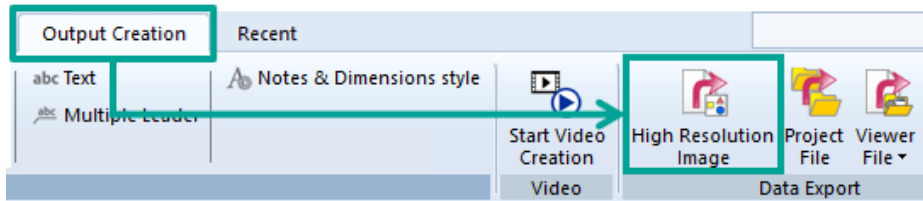


4. Exporting Files

4.1. Exporting High Resolution Images

This function allows you to export the content displayed on "3D View" window as a high resolution image.

1. Select [Output Creation] tab > [High Resolution Image] () from the Ribbon menu.



2. "Output Image" dialog will appear. Specify the image size and grid, and then click [Save].



Grid is only available with Ortho mode ().

The display method can be changed in [Home] tab > [Display Method] > [Ortho View Mode].

3. "Output Image" dialog will appear. Specify the image filename, and then click [Save].

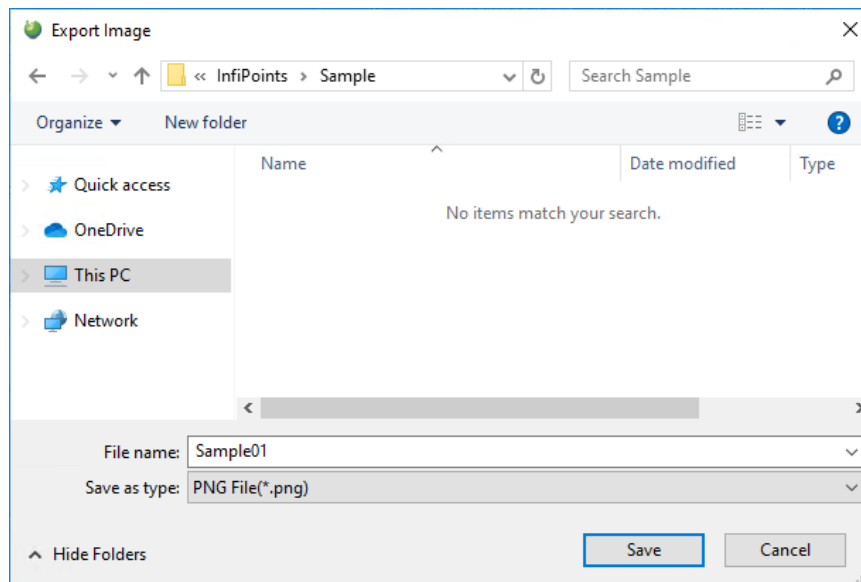
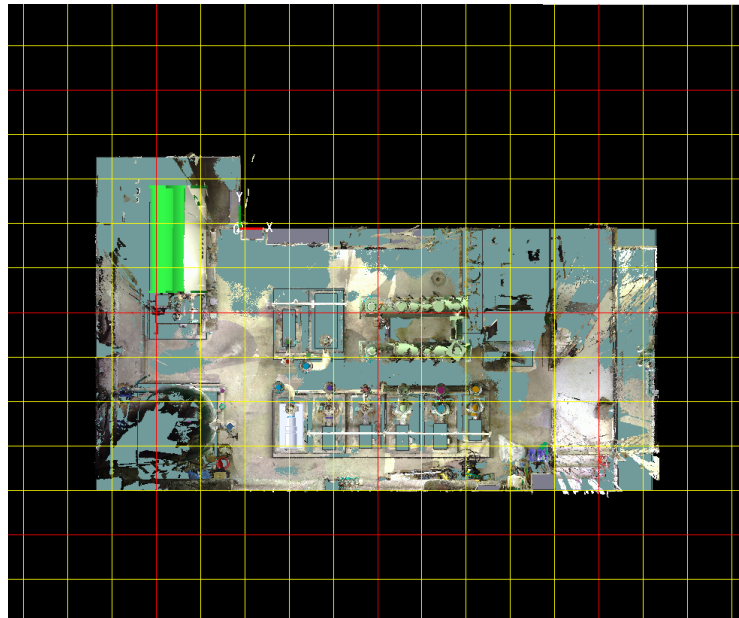


Image file will be exported in .png format.



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