



**Elysium  
InfiPoints®**



# **Elysium InfiPoints Operation Manual**

## **Vol.4. Viewer Files Utilization**

December 2023

Elysium Co. Ltd.

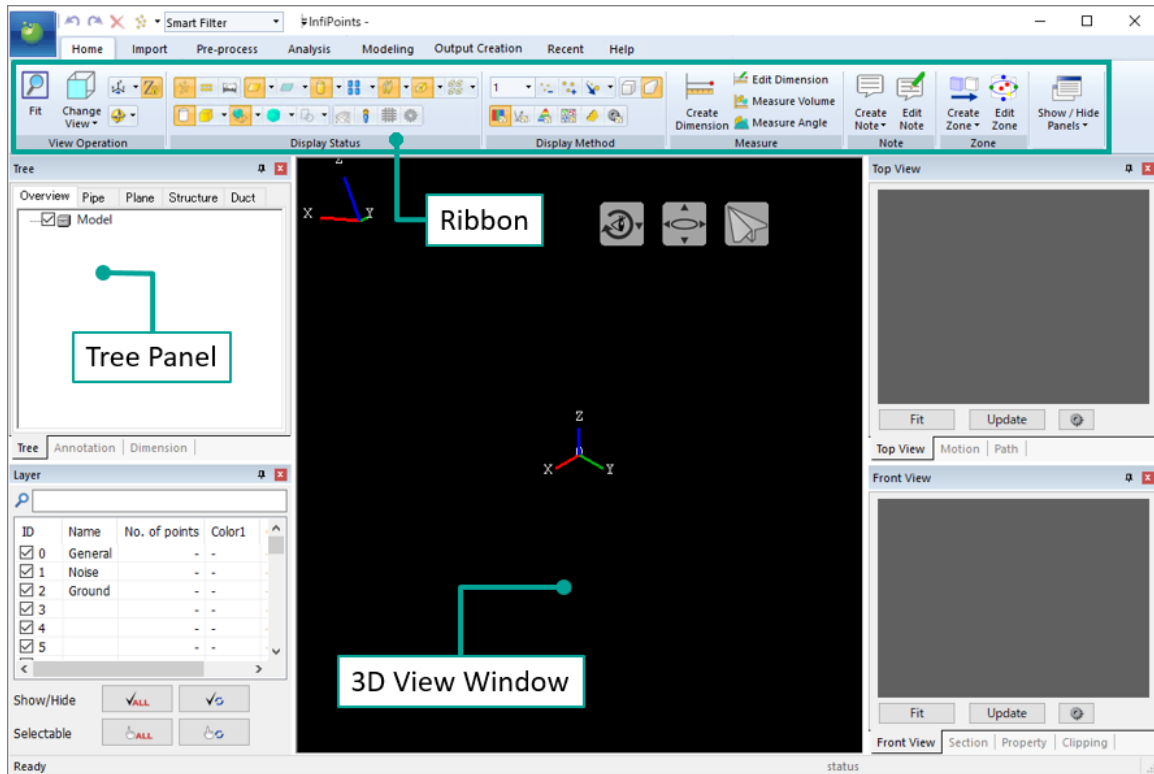
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# 1. View Operation

## 1.1. User Interface (UI)

Below is the UI of InfiPoints.

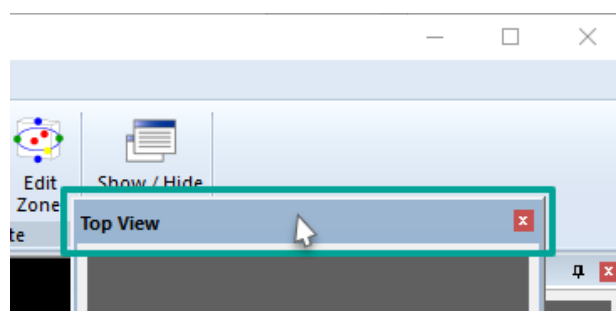


Ribbon	Displays useful icons for operation.
3D View Window	Canvas to display point clouds and CAD models
Tree Panel	Displays imported point cloud and related data (hidden in the screen shot above)

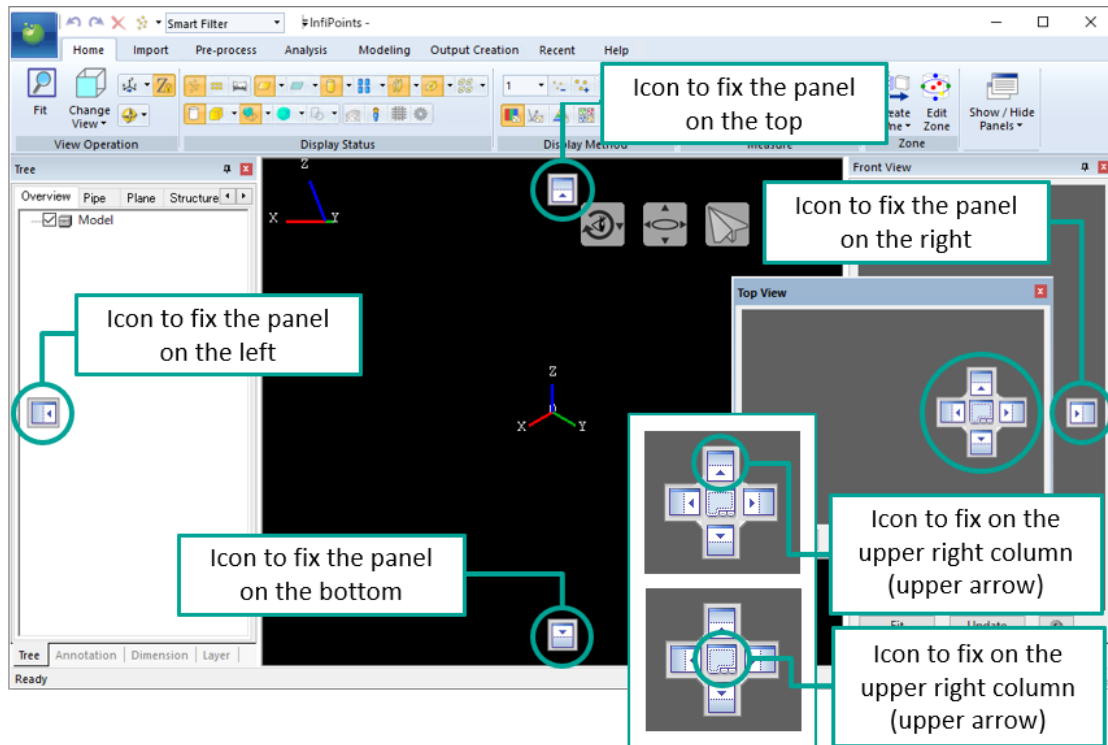
Use the [Show/Hide Panels] in the [Home] tab to show and hide panels (  ).

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.



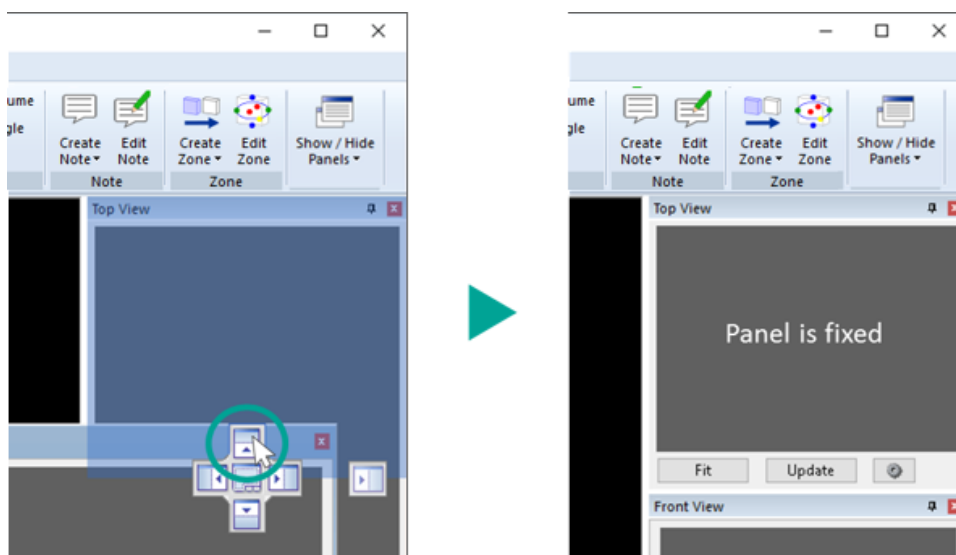
An icon to fix the panel will appear on each side of the screen.



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

(Ex.) Fixing the [Top] 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

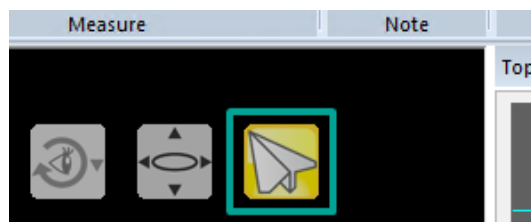



## 1.2. View Operation

### 1.2.1. Viewing Mode

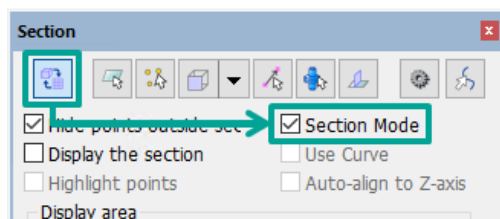
There are three viewing modes in InfiPoints.




- 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(  ).







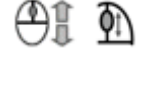













- When "Section Mode" is enabled in either [Section] panel or [Clipping] panel, the mode will switch to Section Mode.



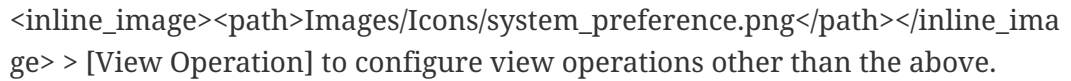
Mode	Description	Projection type	Icon
Default Mode	Movement by moving the model	Ortho View Mode	
		Perspective View Mode	
Fly-through View Mode	Movement by moving the viewpoint	Perspective Mode only	
Section Mode	Switch to 2D front view of the selected section	-	-

## 1.2.2. Mouse Operation

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

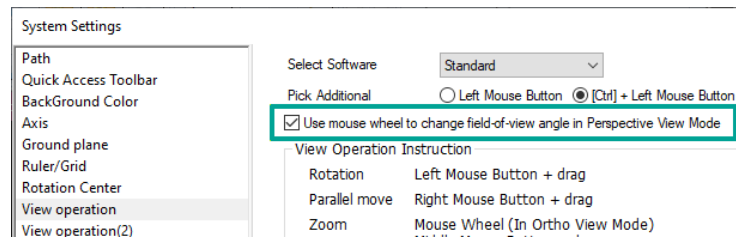
Operation	Description	Normal mode	Fly-through mode	Section mode
Rotate 3D	Rotate the view by moving the mouse	 (Screen center)	 (Screen center)	-
Rotate 2D Z	Rotate model two dimensionally	 (window top)	-	-
Rotate 2D Y	Rotate model crosswise	 (window bottom)	-	-
Rotate 2D X	Rotate model endwise	 (window 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			
Field of view	Change the field of view	- (*1)	- (*1)	-
Fix rotation center	Set the rotation center	[Ctrl]+ 	[Ctrl]+ 	[Ctrl]+ 
Select				
Area selection		[Ctrl]+ 	[Ctrl]+ 	

Select [Application Menu] > [Option] > [System Settings]

 > [View Operation] to configure view operations other than the above.

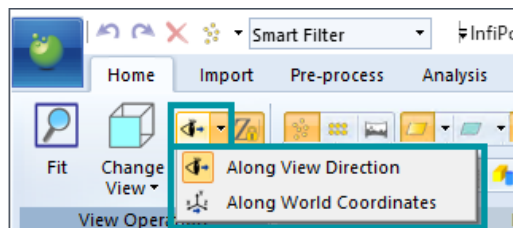



\*1: Check "Use mouse wheel to change field-of-view angle in Perspective View Mode" option in [View Operation] tab to use the mouse wheel to change the field-of-view angle when in normal / Fly-through mode. The mouse wheel will be used in the same way as in "[Panoramic View](#)".



## ■ Normal Mode / Fly-through Mode

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




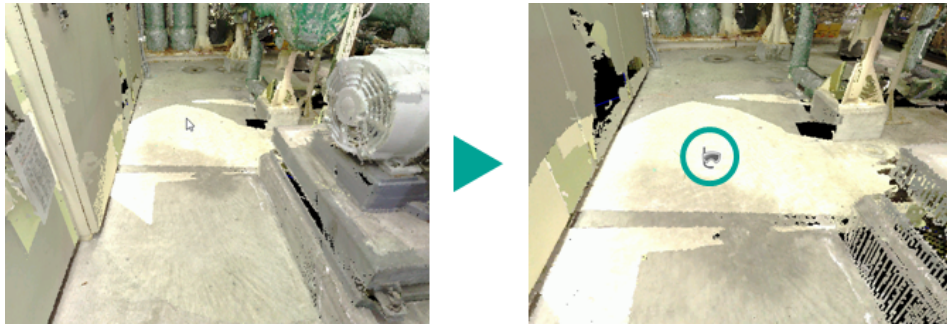
 Along View Direction	Pan/zoom " <b>along view direction</b> "
 Along Z-axis	Pan/zoom " <b>along z-axis</b> "

### • View Operation Using the Mouse


- Zoom in: Move the mouse forward while holding down the mouse wheel (the middle button).
- Zoom out: Move the mouse backward while holding down the mouse wheel (the middle button).
- Pan: Move the mouse while holding down the mouse right button.

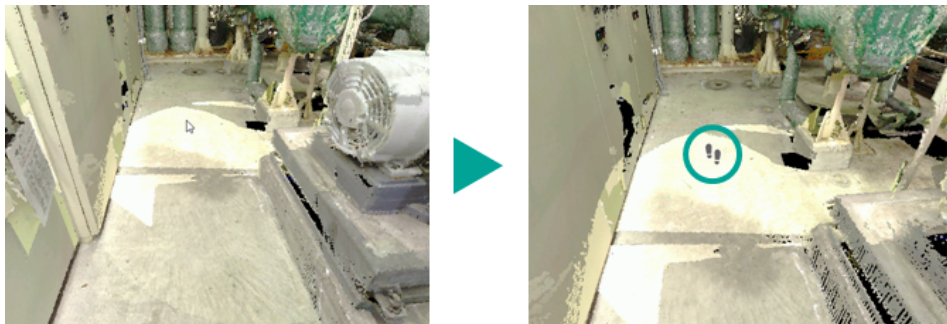
### ■ With "Along View Direction" Option

With the image below as an example, with "Along View Direction" option, the view direction is towards the floor, and you will get closer to the floor as you zoom in.  will be shown in "3D View" window during the view operation.




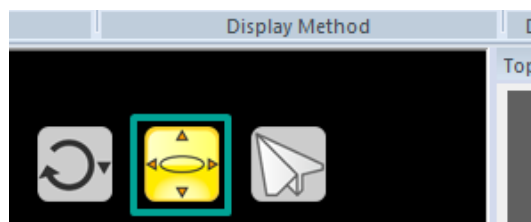
#### ■ With "Along Z-axis" Option

With the image below as an example, with "Along Z-axis" option, the view direction is towards the floor, and you will move forward/backward along the world coordinate axes with the view direction fixed.  will be shown in "3D View" window during the view operation.

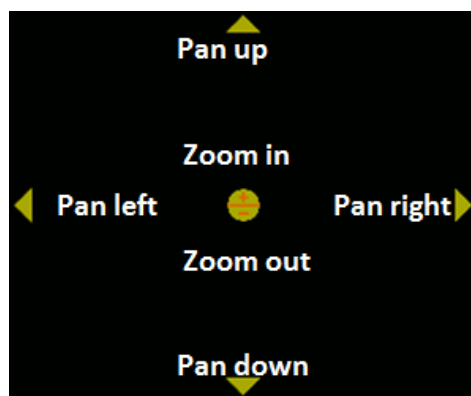


#### • View Operation Using the Handles

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

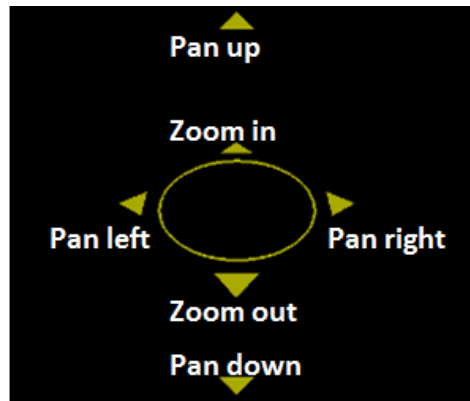



#### ■ ■ With "Along View Direction" Option

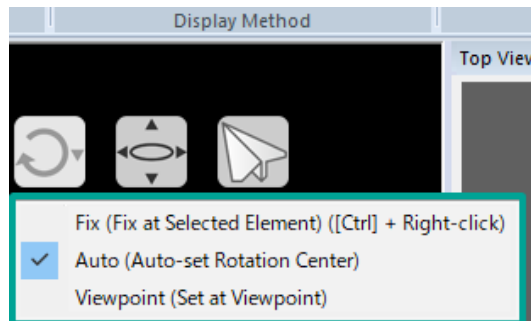





#### ■ With "Along Z-axis" Option







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



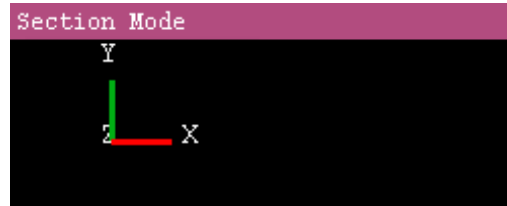
 Fix (Fix at Selected Element) ([Ctrl] + Right-click)	Set the selected object at the rotation center
 Auto (Auto-set Rotation Center)	Automatically set the rotation center at the center area of the 3D View Window
 Viewpoint (Set at Viewpoint)	Set rotation center at viewpoint

## ■ Section Mode

Operation	Description	Section mode
 Zoom	To zoom in/out.	<ul style="list-style-type: none"> <li>• Move the mouse wheel forward/backward.</li> <li>• Drag while holding down mouse left + right buttons. Drag downward to zoom in, and upward to zoom out.</li> </ul>
 Pan	To pan left/right/up/down.	<ul style="list-style-type: none"> <li>• Right-drag.</li> </ul>



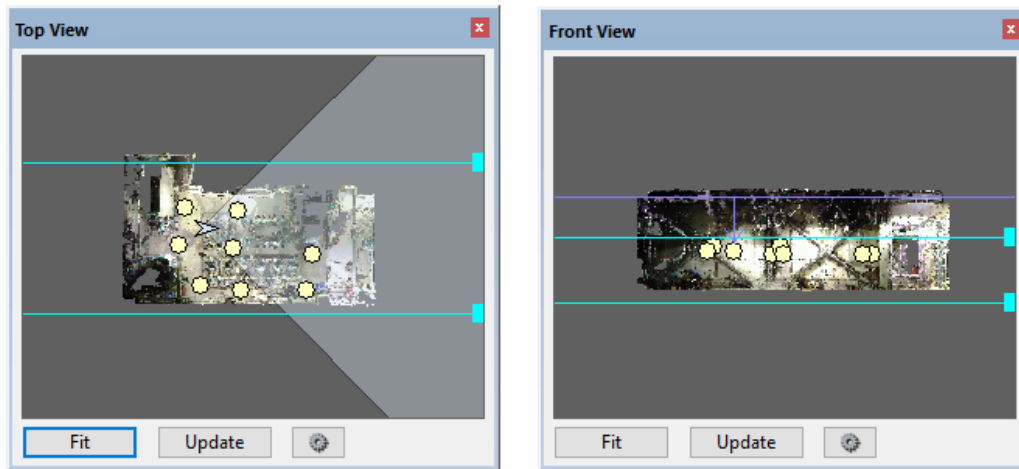
- Purple bar is displayed at the top of "3D View" window when you are in Section Mode.



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

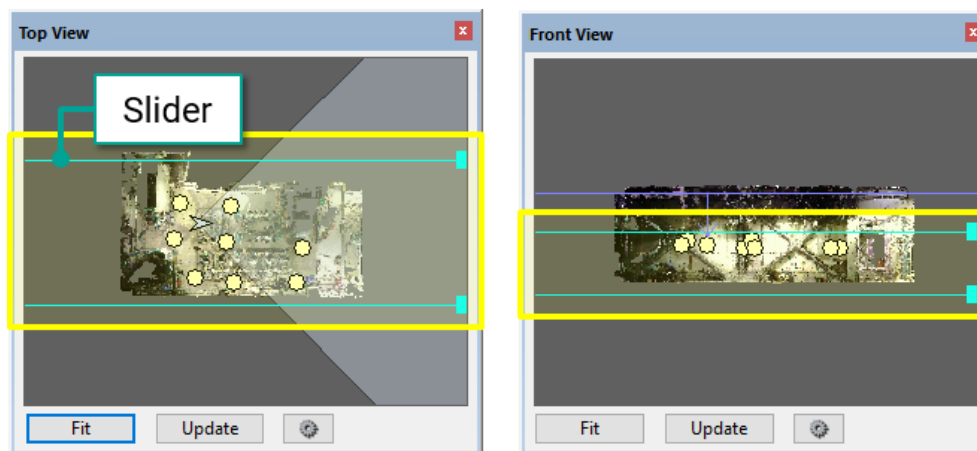
### 1.2.3. View Operation Using 2D Layout View

This section explains the view operation in [Top View]/[Front View] panels.



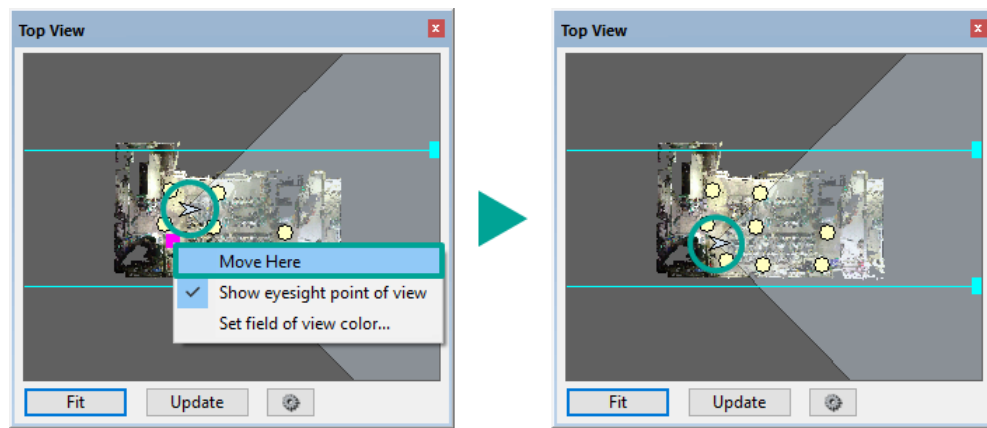
- Zoom in/out: Move the mouse wheel forward/backward in [Top View]/[Front View] panel.
- Pan: Right-drag.
- The blue sliders in [Top View] panel is to control the display range of [Front View] panel, and vice versa.

This is useful to increase the ease of manual registration in [Top View]/[Front View] panels.

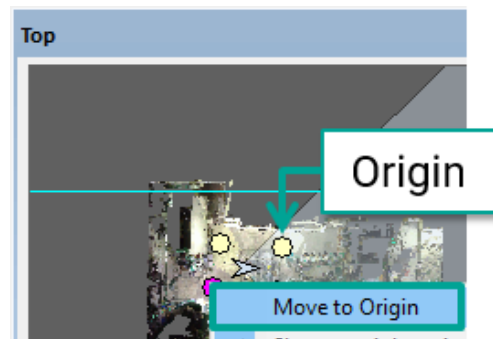


- The display range of [Top View]/[Front View] panel will be updated as you move the blue sliders.

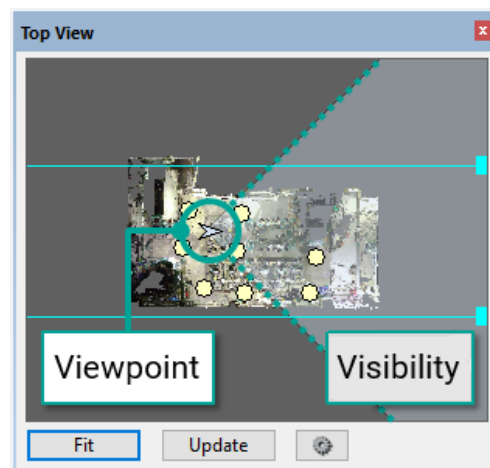
- Right-click in [Top View]/[Front View] panel, and select [Move Here] from the context menu to move the viewpoint in "3D View" window to the clicked location.



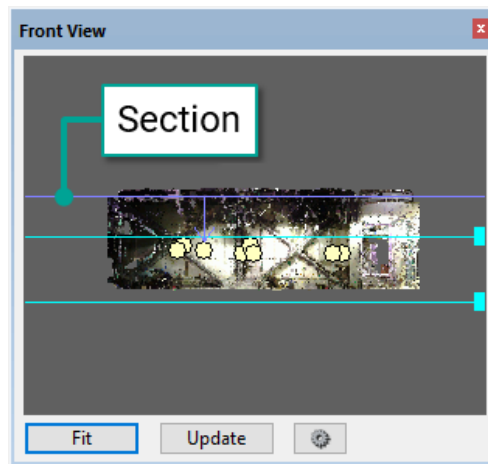
Right-click on a scanner position in [Top View]/[Front View] panel, and select [Move to Origin] from the context menu to move the viewpoint in "3D View" window to the selected local origin.



- [Top View] panel shows the viewpoint, and the field-of-view area of "3D View" window.

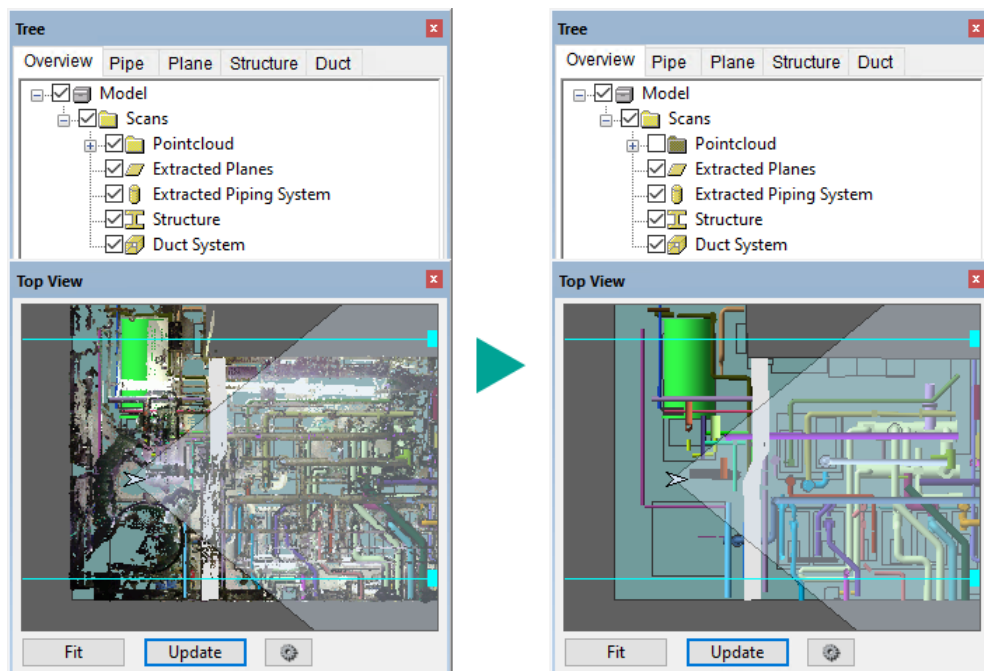


- [Top View]/[Front View] panels show the section / Clipping Box. /ifdef::help-en[They also allow the rough creation of the section / Clipping Box with a whole picture of the project. +]  
To adjust the location and/or the size of the existing section / Clipping Box, use [Section]/[Clipping] panel and/or "3D View" window.



Please note that the section / Clipping Box may be shown in either of [Top View]/[Front View] panel only depending on the created location, operation, etc.

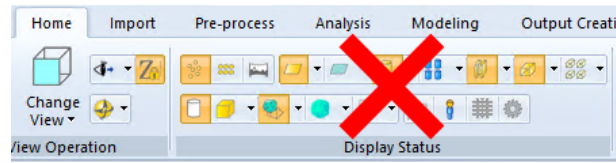
- Show/Hide status of elements in [Top View]/[Front View] panels is based on that set in [Tree] panel. Element(s)/Group(s) shown in [Tree] panel are shown in [Top View]/[Front View] panels, and element(s)/group(s) hidden in [Tree] panel are hidden in [Top View]/[Front View] panels.



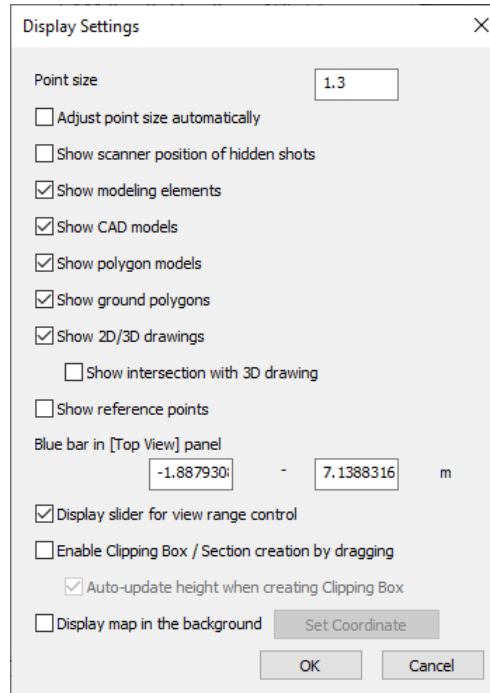
Click [Update] in [Top View]/[Front View] panel to reflect the changes made in "3D View" window and/or other panels when the view update is delayed.



Please note that "Show/Hide" commands in [Home] tab > [Display Status] category are to show/hide elements in "3D View" window per element category, and do not affect the display in [Top View]/[Front View] panels.



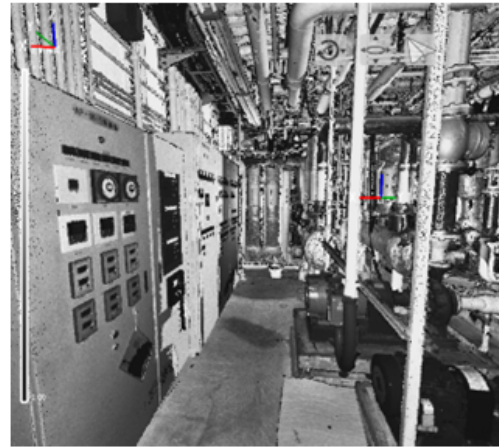
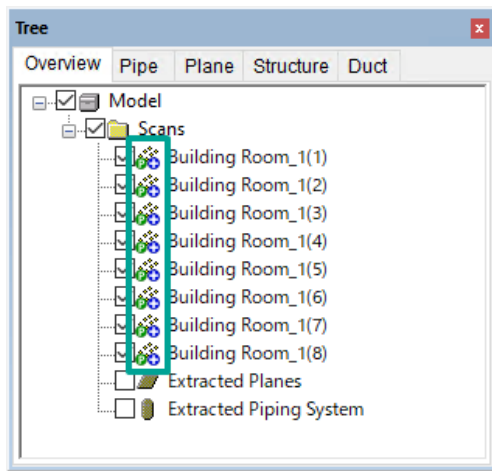
- Click  in [Top View]/[Front View] panel to edit the display settings of each panel.



Please note that the display settings of [Top View]/[Front View] panels are independent from each other. Set options independently as appropriate.

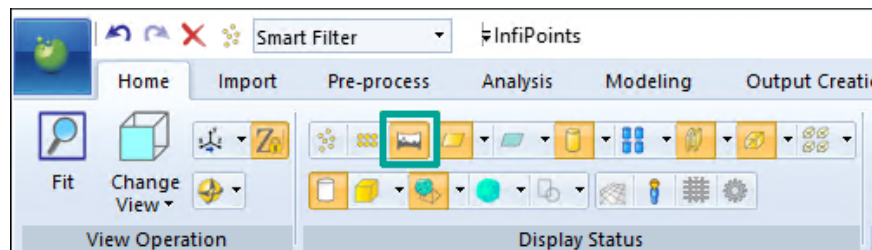
## 1.2.4. View Operation in Panoramic View

This section explains the view operation in Panoramic View. Panoramic View is available on the projects which contain scan shots that have scan index, and the photos from the scanner.



**P** on the icon in [Tree (Overview)] panel indicates that the corresponding scan shot contains the photos from the scanner.

- Select [Home] tab > [Switch to Panoramic View] (  ) from the ribbon menu.



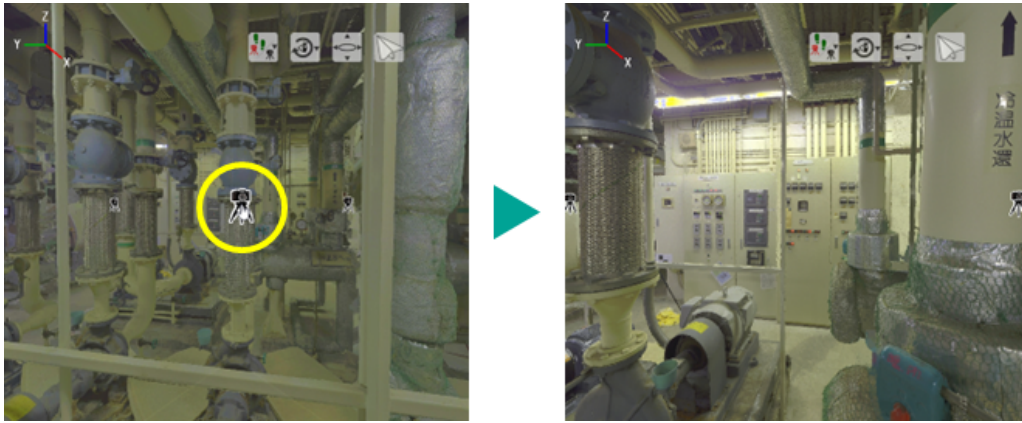
"3D View" window will switch to Panoramic View.



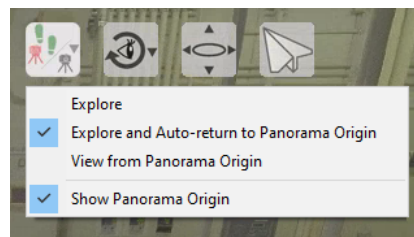
## ■ Panoramic View




Click a scanner position (  ) to move the viewpoint to the selected panorama origin.





- To switch the view operation method in Panoramic View
  - Select how the view behaves to the view operation.




 Explore	Drag while holding down the mouse wheel or the mouse middle button to move the viewpoint forward/backward.
 Explore and Auto-return to Panorama Origin	Drag while holding down the mouse wheel or the mouse middle button to move the viewpoint forward/backward. Release the mouse wheel or the mouse middle button, and the viewpoint will move to the nearest panorama origin.
 View from Panorama Origin	Select a panorama origin in "3D View" window, and the viewpoint will move to it. The viewpoint is fixed at the selected panorama origin.





Disable [Show Panorama Origin] to hide the scanner positions in "3D View" window.

- View Operation Using the Mouse

Operation	Description	Panoramic view
 Field of view	Change the field-of-view angle.	

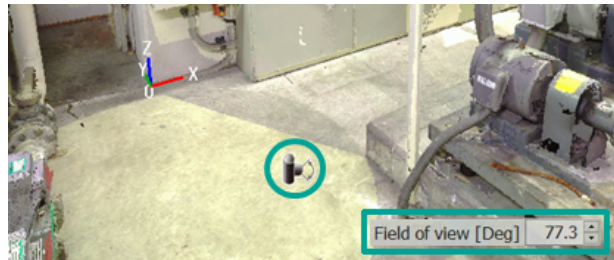



Operation	Description	Panoramic view
 Zoom	Zoom the view with the mouse movement (Zoom will move forward and backward without changing the vertical direction height)	

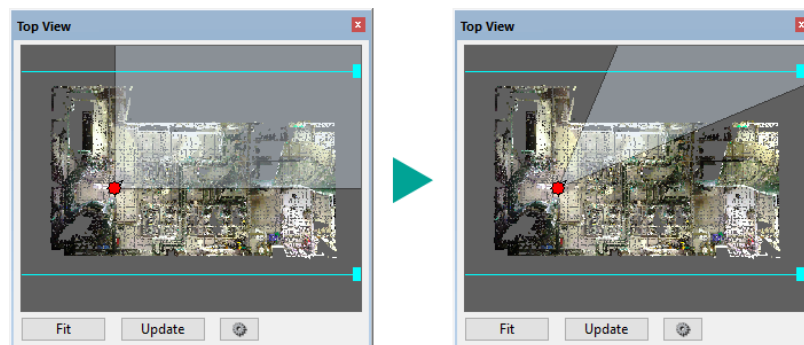
## ■ Field of View

Move the mouse wheel in "3D View" window to change the field-of-view angle in Panoramic View.

- Move the mouse wheel forward to increase the field-of-view angle.
- Move the mouse wheel backward to decrease the field-of-view angle.




-  icon will appear in "3D View" window when changing the field-of-view angle.
- Move the mouse wheel, and [Field of view [Deg]] field will also appear in "3D View" window. Specify the value in the field to change the field-of-view angle.
- The field-of-view angle is shown in [Top View]/[Front View] panels. (Left: Field-of-view angle is 90 degrees. / Right: Field-of-view angle is 45 degrees.)

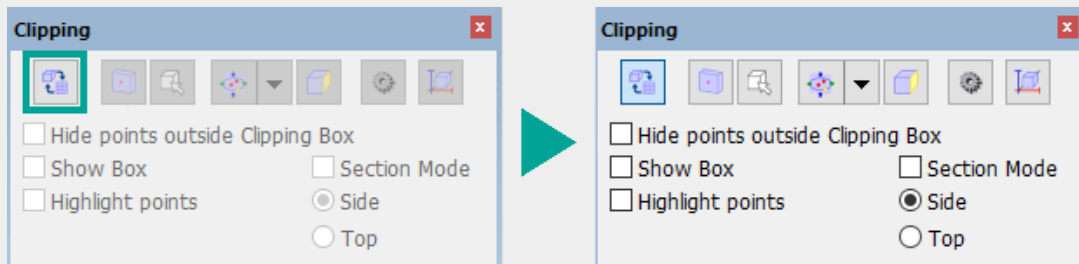


## 1.3. Viewing within Clipping Box

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.

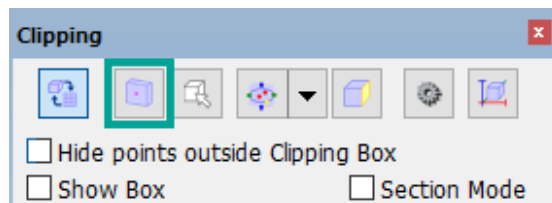
### Preparing to Create Clipping Box

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

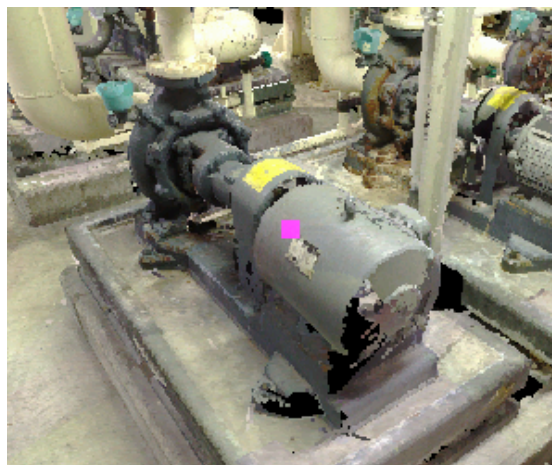


Clipping Box and Section cannot be used at the same time.

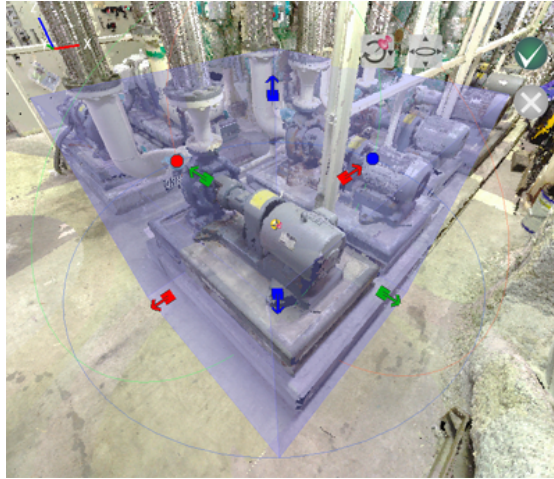
1. In [Clipping] panel, press [Create Clipping Box] (  ).



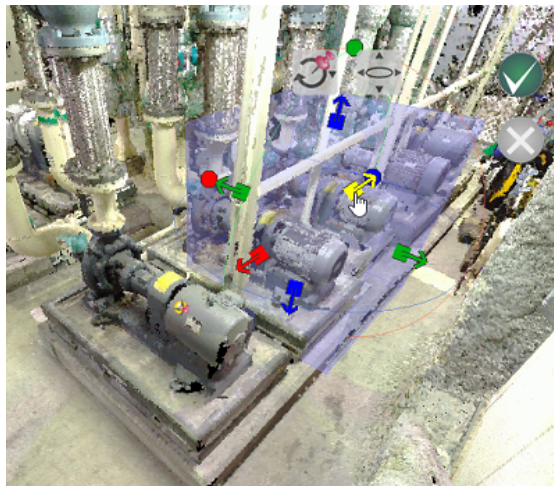
2. Pick a point on the screen to select an area to clip out.



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

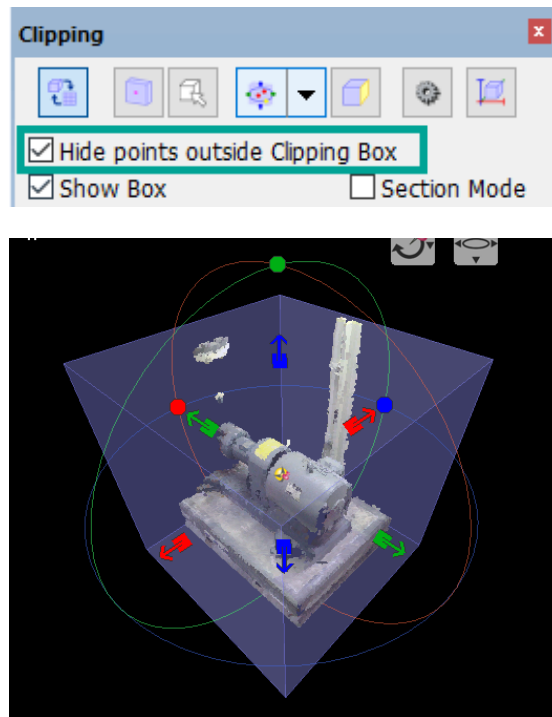


3. Change the size of the Clipping Box by dragging the handle that appears around the Clipping Box while clicking and holding.



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.



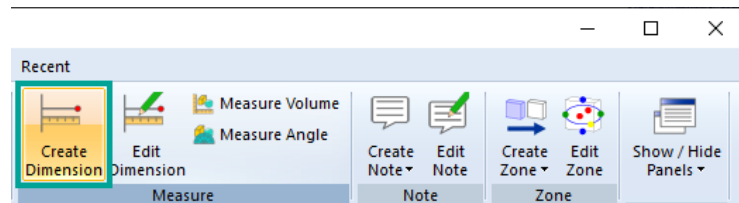
## 2. Simulation

### 2.1. Setting Dimension

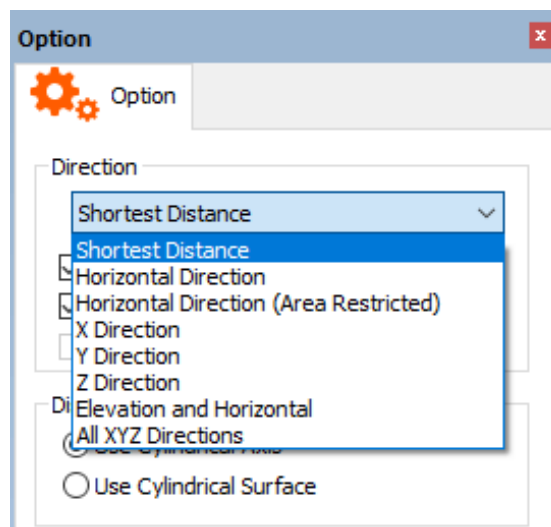
Users can virtually measure dimensions using point cloud data without going on-site. Therefore, taking measurements of unsafe locations and heights will not be a problem using InfiPoints.

#### 2.1.1. Creating Dimension

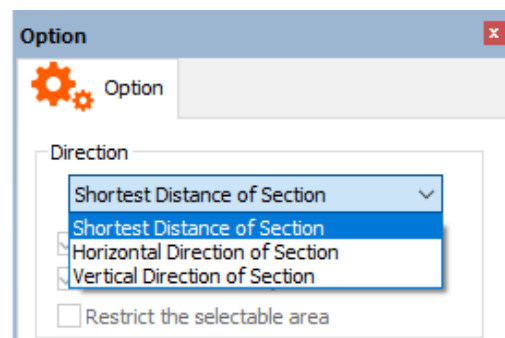
1. Select [Home] tab > [Create Dimension] (  ) from the Ribbon menu



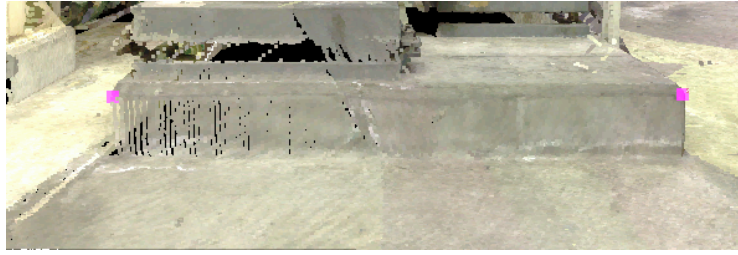
2. [Option] panel will appear. In this case, select "Shortest Distance".



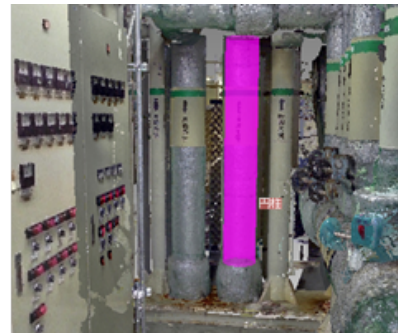
Please note that if "Section Mode" is enabled in [Section] panel, the following "Option" dialog will appear.



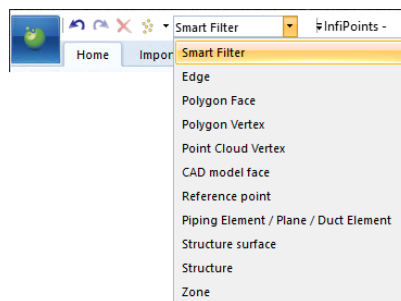
### 3. Pick the starting and ending point of measurement.



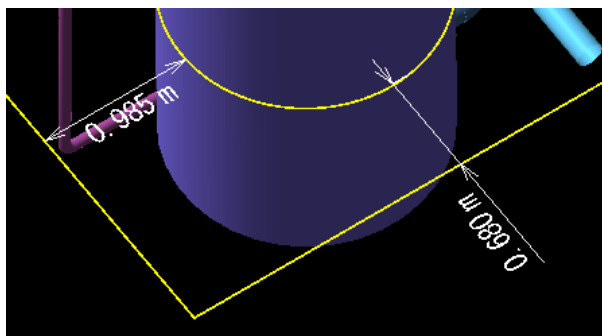
If pipes/planes are already extracted, candidates near the mouse cursor will be highlighted.



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

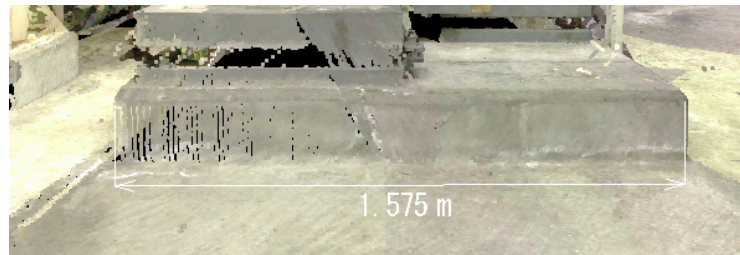


It is not possible to specify 2D drawing elements as selection targets; however, if you generate point clouds from 2D drawings, you can specify them as selection targets (point cloud vertices). Please refer to "[Generating point cloud from 2D drawing](#)" for details about generating point cloud from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





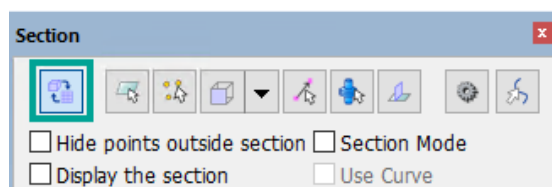
- The dimension will appear when the starting and ending points are selected.  
Users can choose where to locate the dimension annotation when clicking in a selected area.



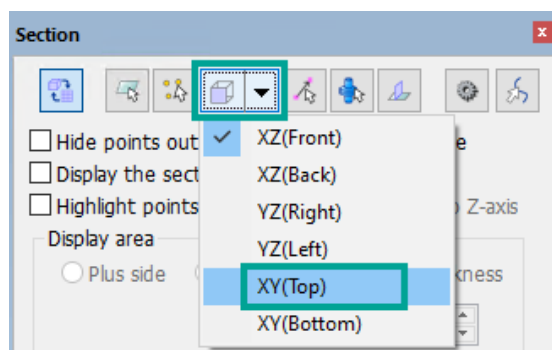
### 2.1.2. Creating Dimension (Section Mode)

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

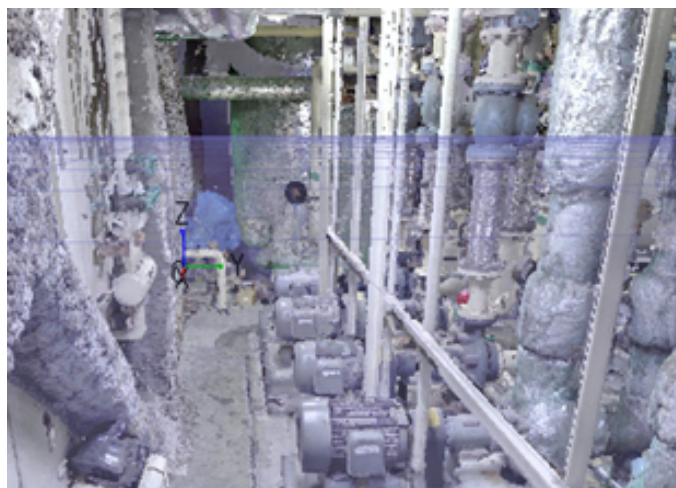
- In [Section] panel, press [Switch Mode: Clipping/Section] (  ) to enable the Section mode.



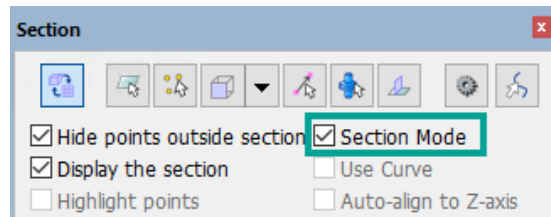
- Select the direction of section. In this case, select "XY (top)" to set the horizontal section.




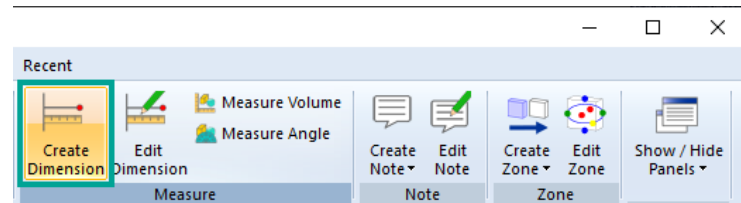
- Select the location for cross-section in the 3D View Window. A cross-section which passes through the selected point will be created.



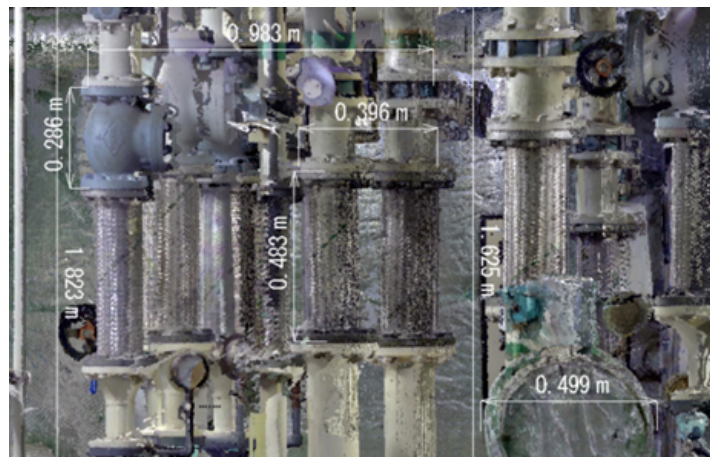
4. In [Section] panel, enable "Section Mode".



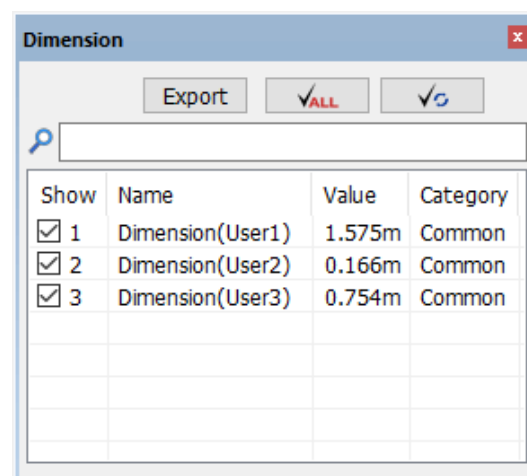
5. Select [Home] tab > [Create Dimension] (  ) from the Ribbon menu to measure a certain location.



- An example of a dimension viewed from a section



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

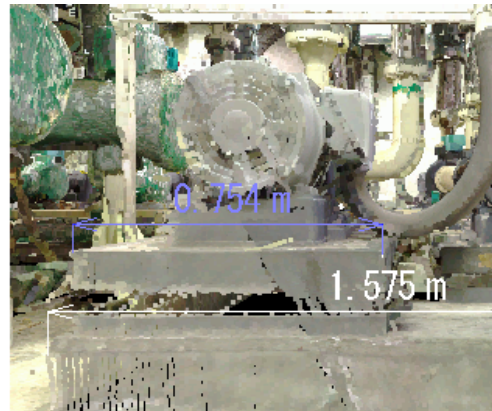
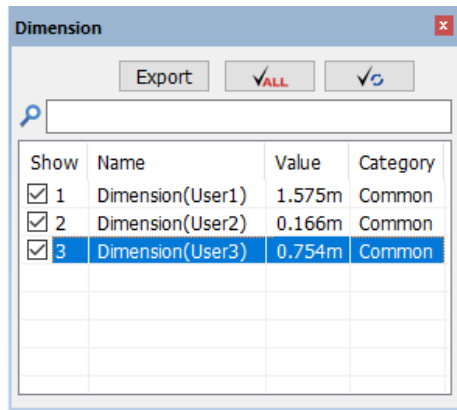




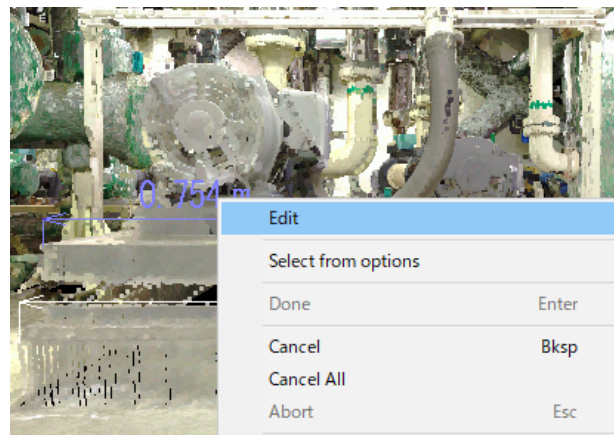
### 2.1.3. Editing Selected Dimension

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

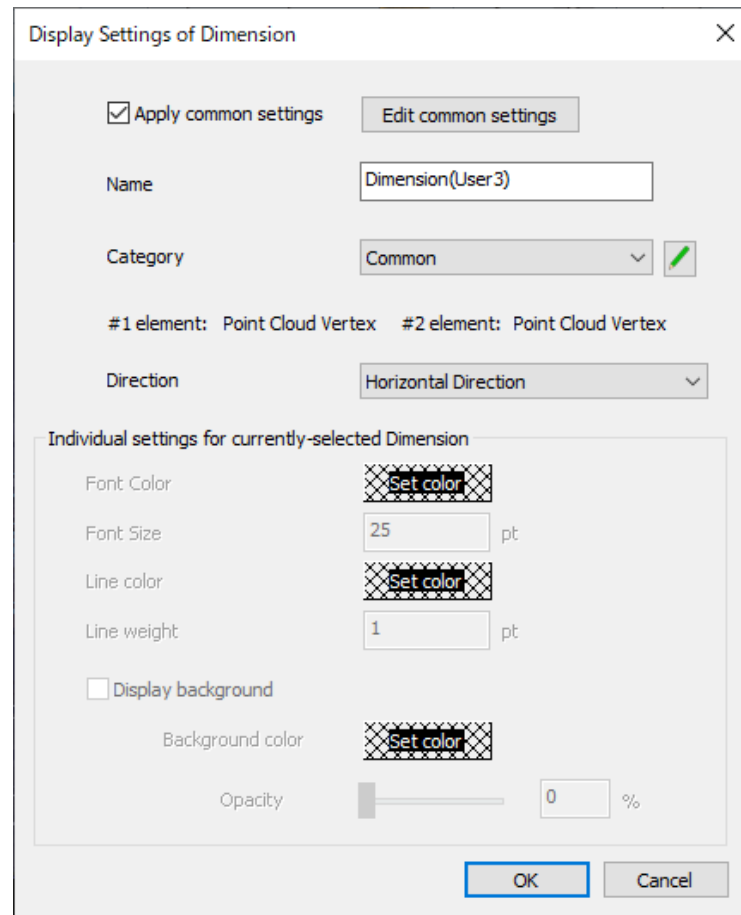
[Dimension] panel will appear, and the dimension you picked will be highlighted.



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

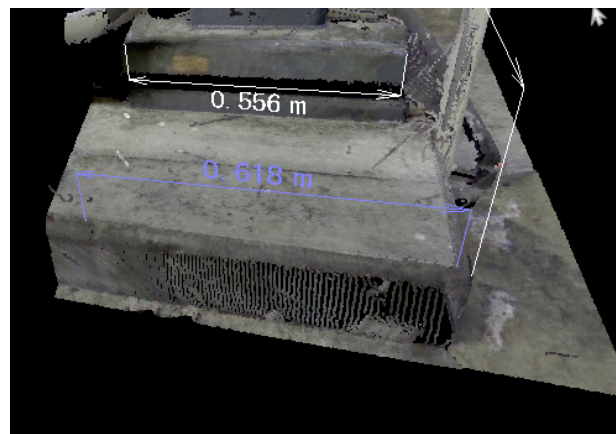


- "Display Settings of Dimension" dialog will appear. Edit the name and format of the dimension, and then click [OK].

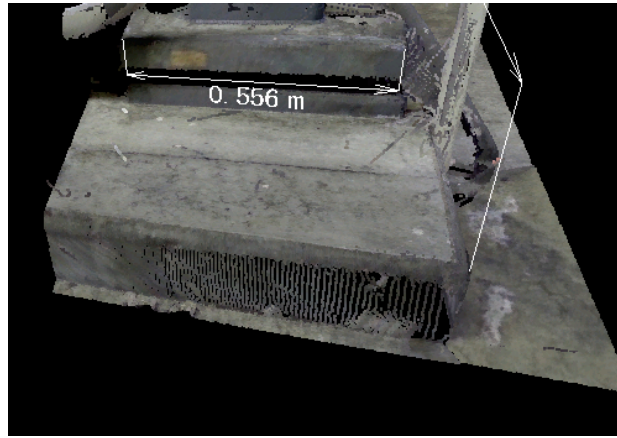


## 2.1.4. Deleting Selected Dimension

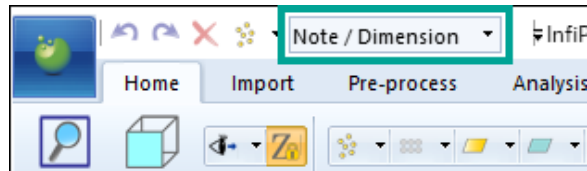
- Select note(s) and dimension(s) to delete in 3D View Window.  
[Dimension] panel will appear and selected dimension will be highlighted.



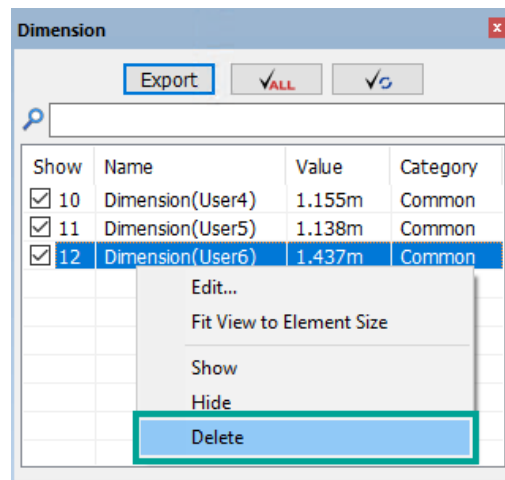
- Select [Delete the selected elements] (  ) from the quick access tool bar or select [Delete] to delete the selected dimension.



- 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.

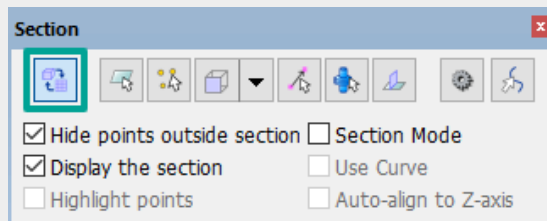


## 2.2. Creating 2D Drawings

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.

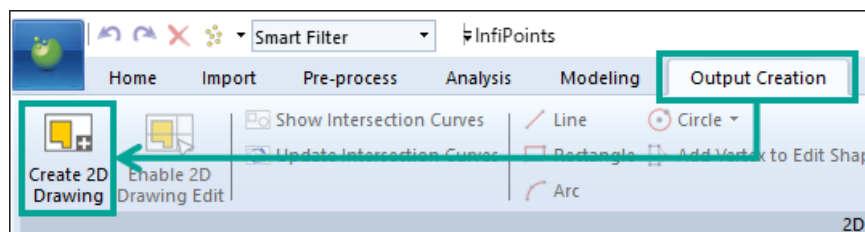


- Please refer to "Create Section" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization: Simulation & Data Utilization" for ways to create a section.
- Please refer to "Create Clipping Box" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization: Simulation & Data Utilization" for ways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



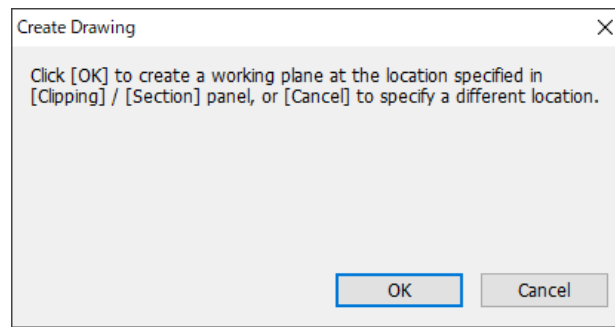
You cannot use [Section] panel and [Clipping] panel at the same time.

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

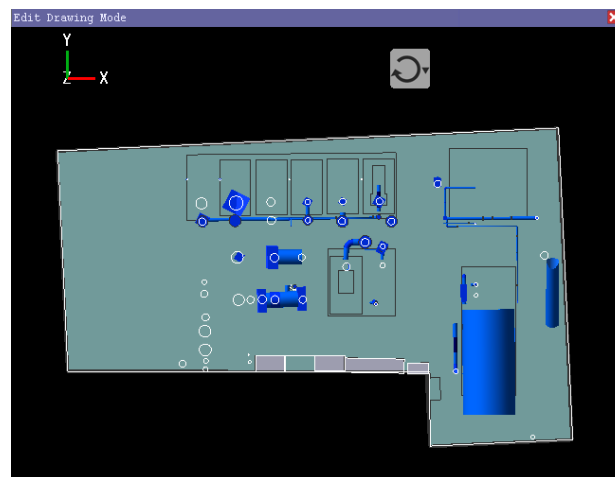


Please enable the [Section] panel when creating the 2D drawing.

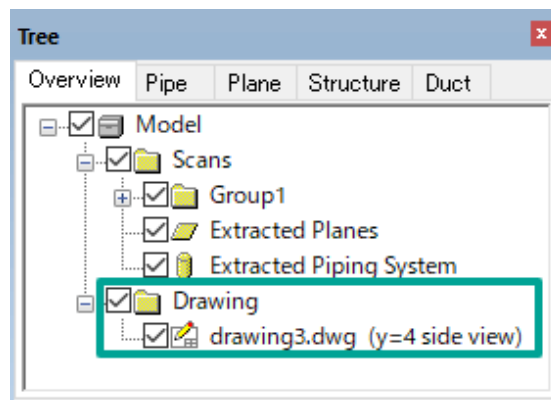
2. On "3D View" window, a preview of where the drawing will be created is displayed. In "Create Drawing" dialog, click [OK].



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.



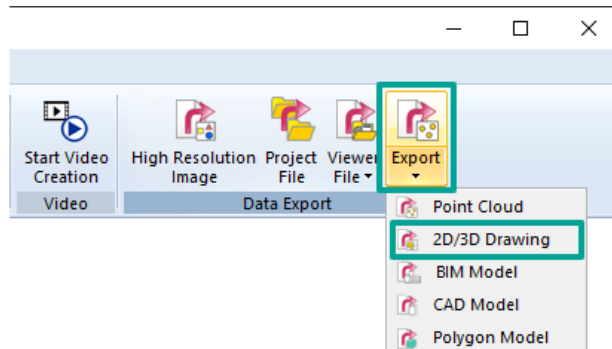
A [Drawing] folder will be added to the [Tree (Overview)] panel.



## 2.3. Exporting as 2D Drawings

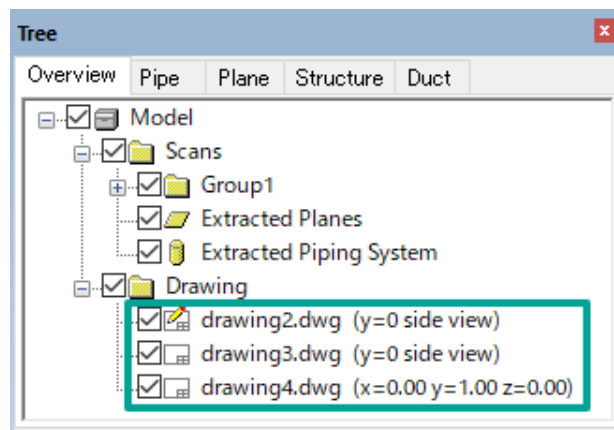
InfiPoints can create drawings, and export them as 2D drawing data (DWG/DXF formats) and background image data (PNG format). Exported background image data (PNG) can be used as an image to be placed in the background for AutoCAD and BIM softwares.

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

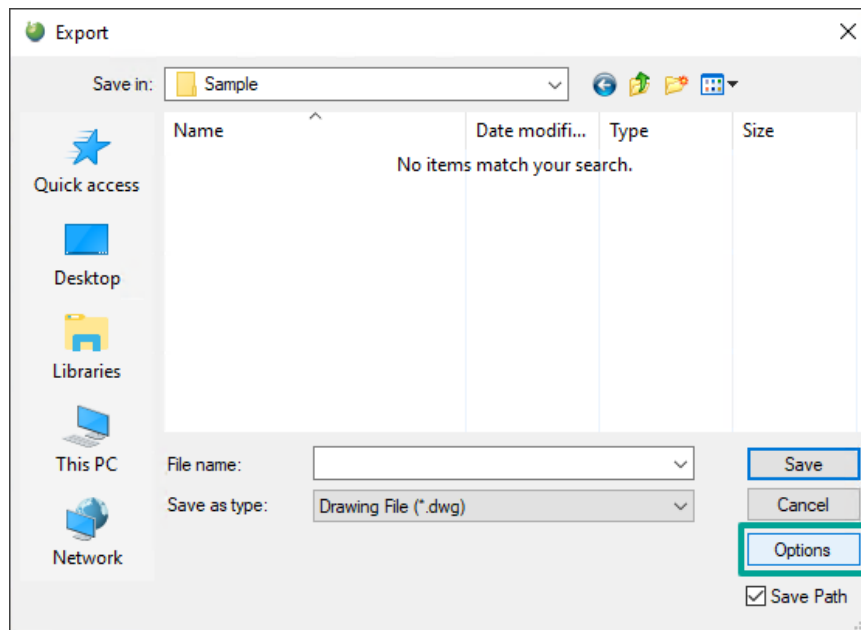


Only when "Edit Drawing Mode" is enabled, 2D drawing data (DWG/DXF formats) and background image data (PNG format) are exported. When executing "Normal mode", only the drawing data (DWG/DXF format) is exported.

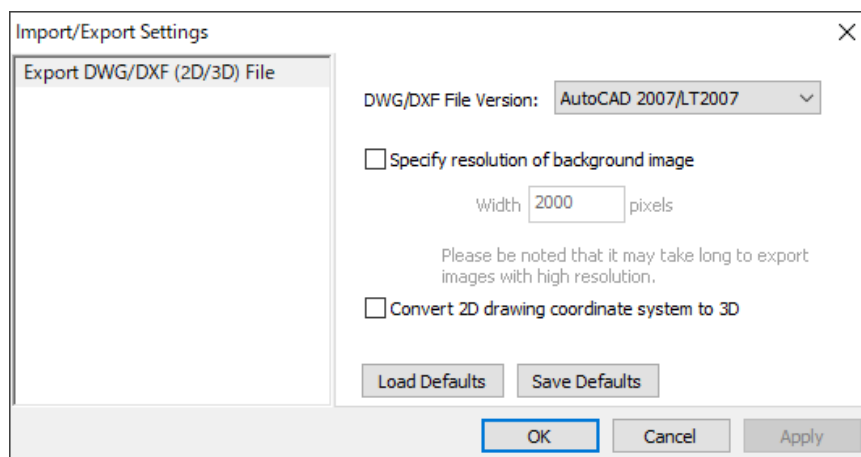
2. Select the 2D drawing to be exported from the [Tree (Overview)] panel when multiple 2D drawings are in the panel.



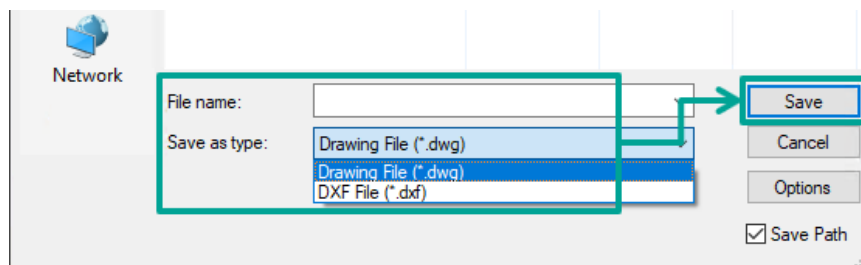
3. "Export" dialog will appear.



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



4. 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.



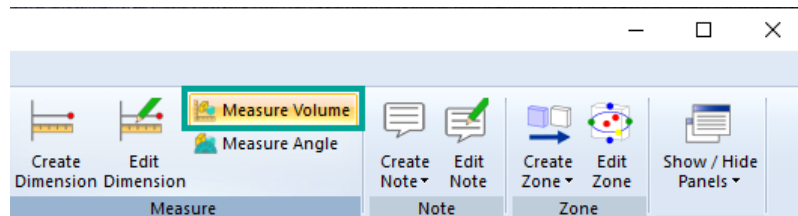
When exporting the background image, always use "Edit Drawing Mode".


## 3. Measuring

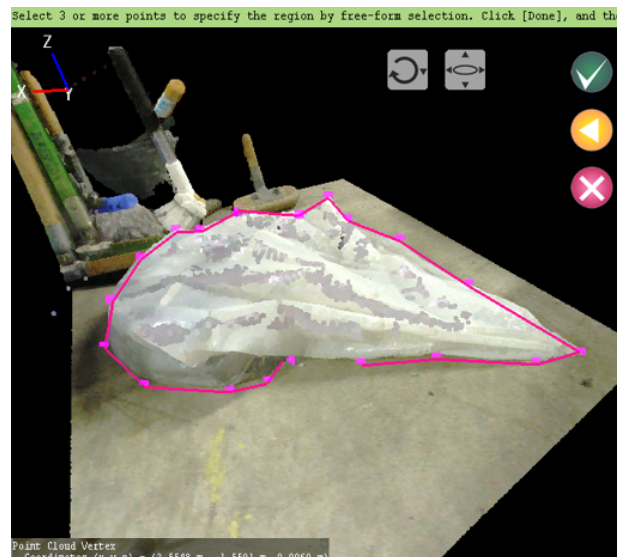
### 3.1. Measuring Volume and Surface Area


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

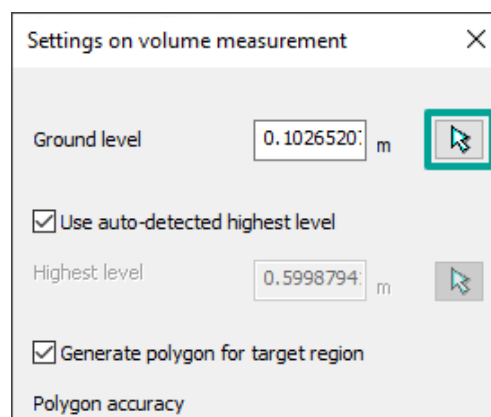
1. Select [Home] tab > [Measure] > [Measure Volume] (  ).



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".

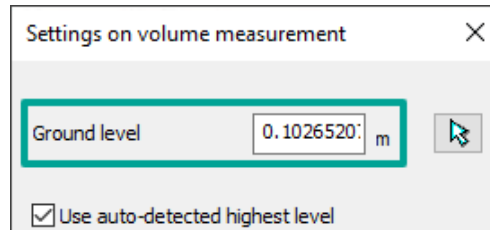


Specify a point at the base ground position on "3D View" window.

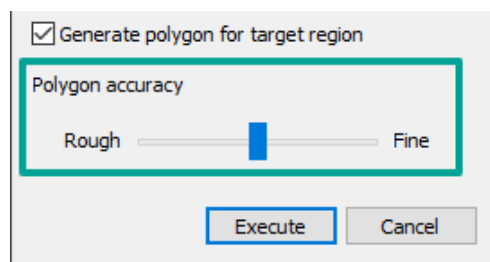




The Z coordinate value of the picked point is automatically set as "Ground level".

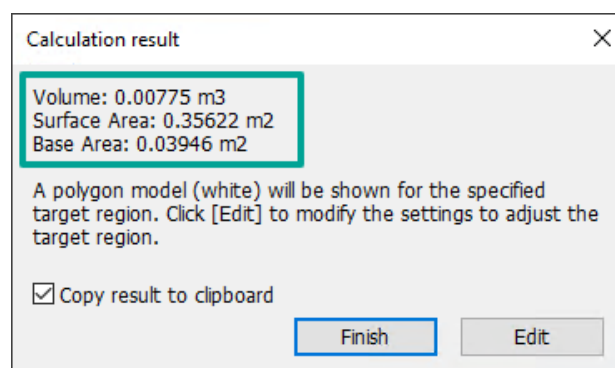


4. Adjust "Polygon accuracy", and click [Execute].

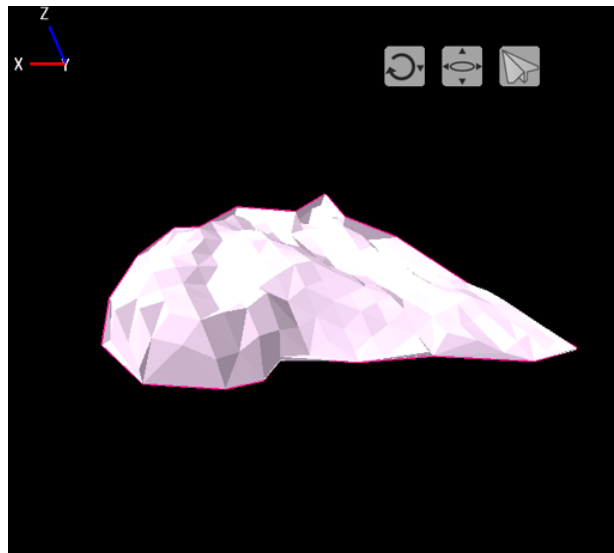


When the polygon model is not to be left after measurement is performed, disable "Generate polygon for target region".

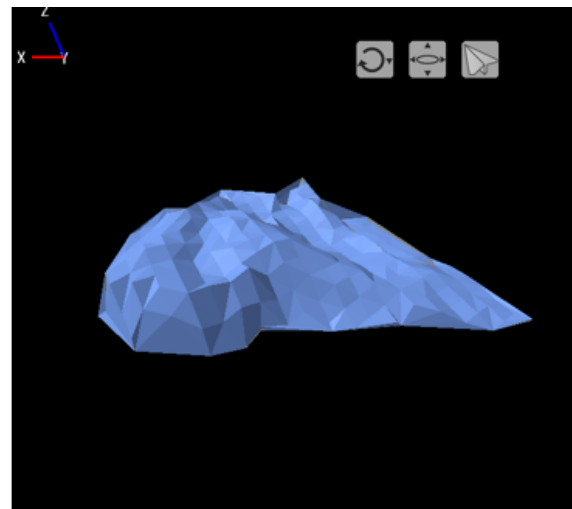
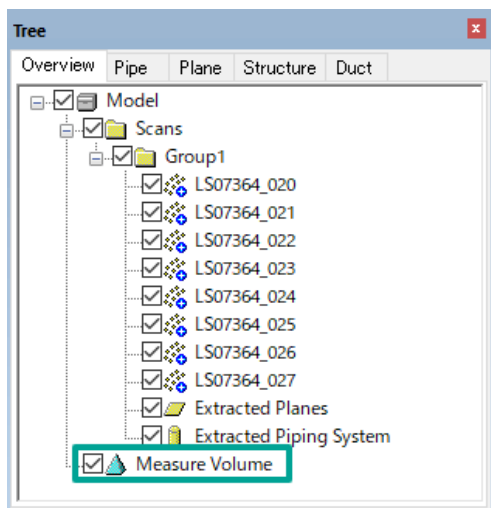
5. A result dialog will appear. Confirm the volume, surface area, and base area.



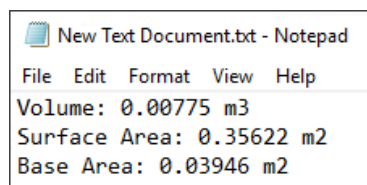
6. A polygon model is temporarily created on "3D View" window.



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.

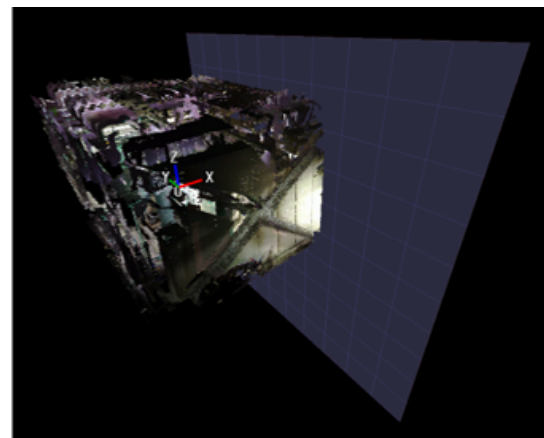
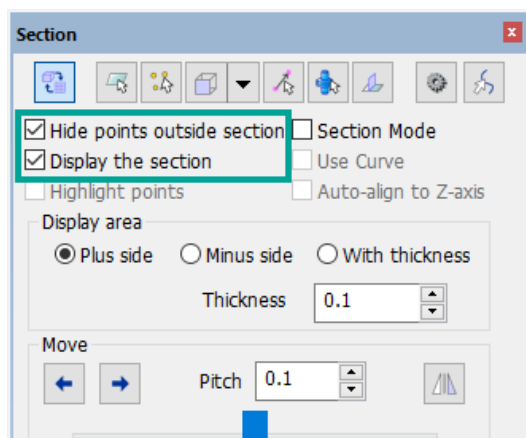


## 3.2. Measuring the Side Volume

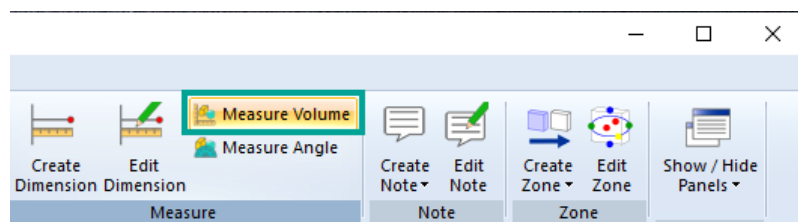
As shown in the figure below, this function measures the volume, surface area, and base area of a region extruded from a specified range to a specified section.




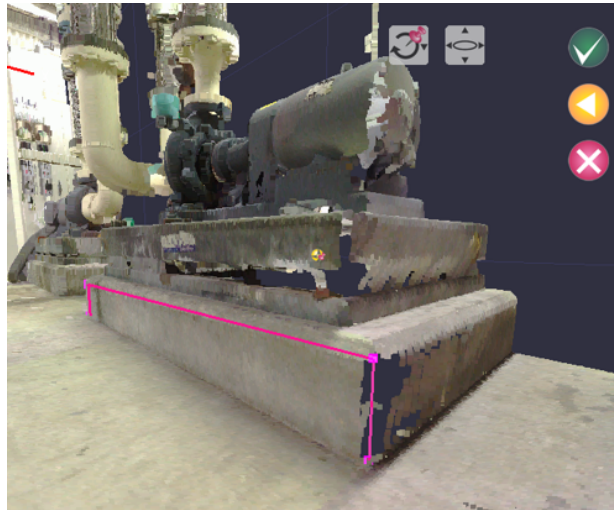
1. On "3D View" window, set the section.



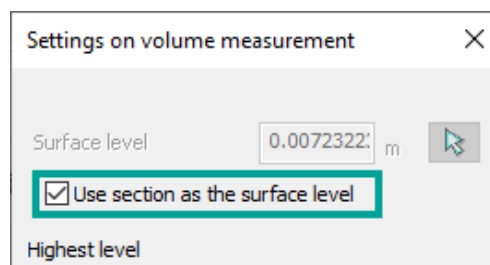
2. Select [Home] tab > [Measure] > [Measure Volume] (  ).



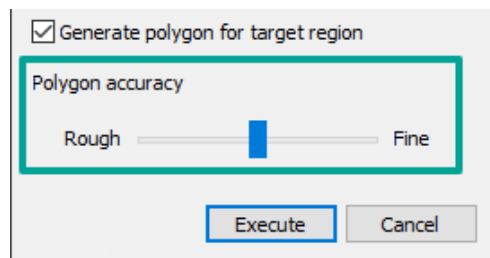
3. Pick to enclose the area you want to measure on "3D View" window, and then press [Done] (  ).




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

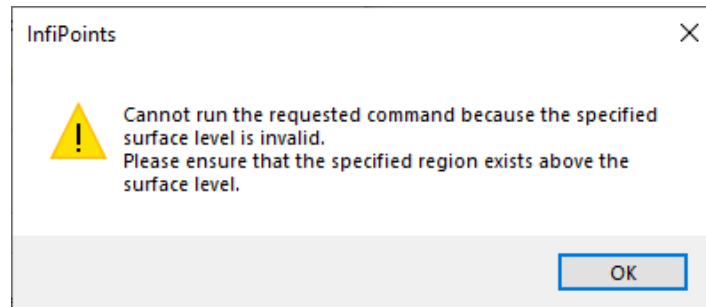


Adjust "Polygon accuracy", and click [Execute].

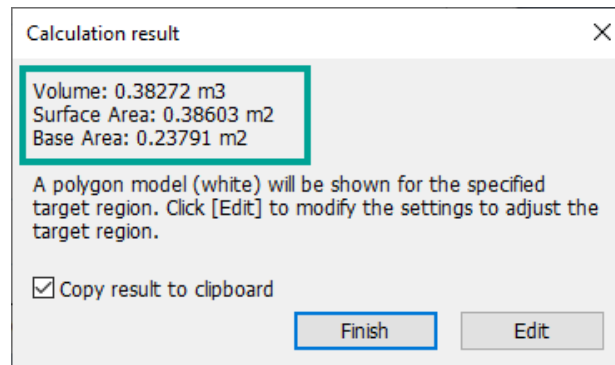


When the polygon model is not to be left after measurement is performed, disable "Generate polygon for target region".

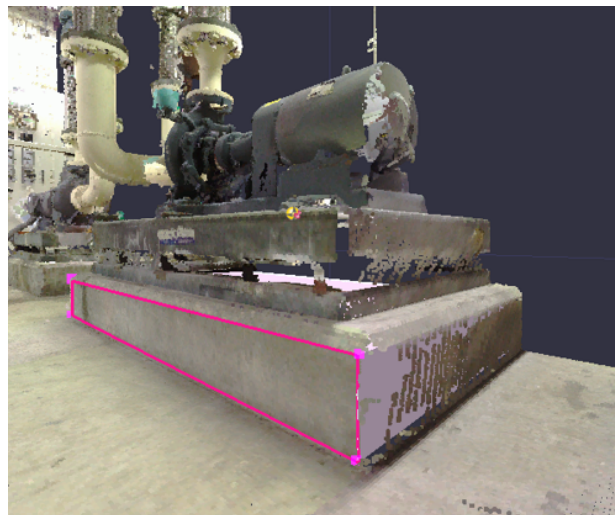
Please note that if the orientation of the section is incorrect, the following dialog will appear. In [Section] panel, press [Switch the Orientation (Plus/Minus) of Section] (  ) to flip the orientation of the section, and then click [Execute] again.



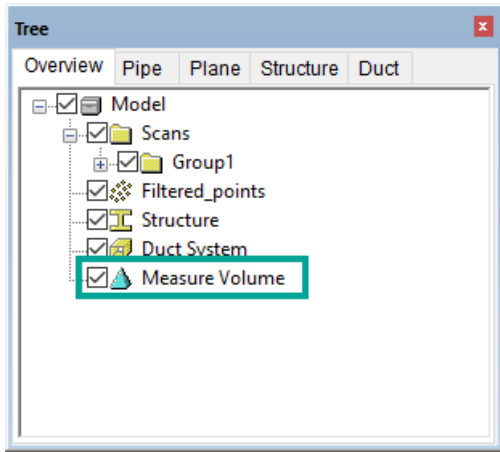
5. A result dialog will appear. Confirm the volume, surface area, and base area.



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



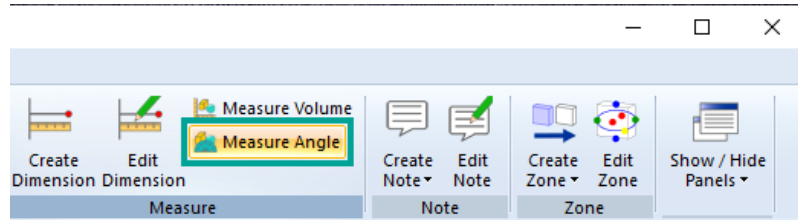
6. Click [Finish] in the result dialog to save the polygon model.



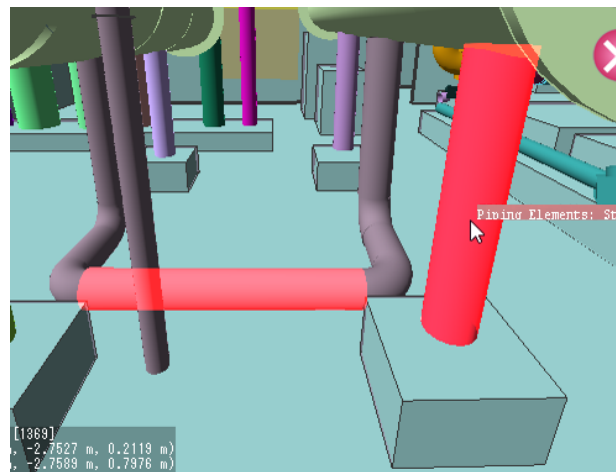
### 3.3. Measuring Angle

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] (  ).

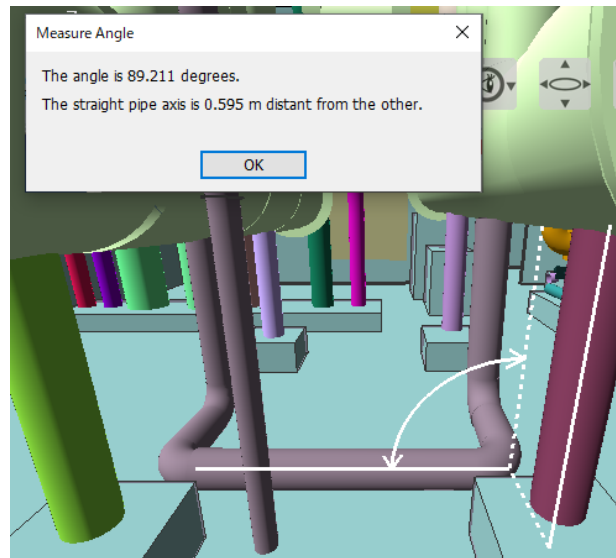


2. Specify the target elements (plane, pipe, or among 3 points) on "3D View" window.  
To measure the angle of pipes, select two pipe elements (straight pipes) on "3D View" window.



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

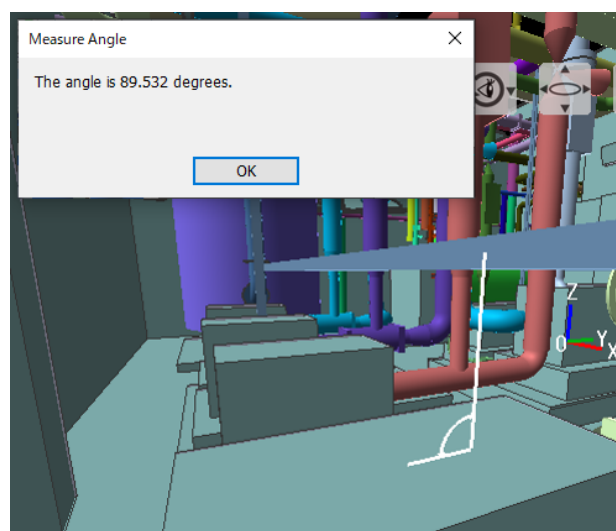
In "Measure Angle" dialog, you can confirm the angle and the deviation of the axes of the two straight pipes.



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.

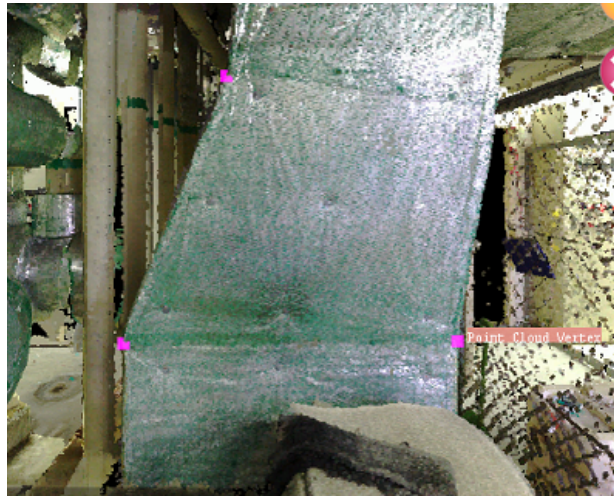


"Measure Angle" dialog and a preview of the measured position will appear on "3D View" window.

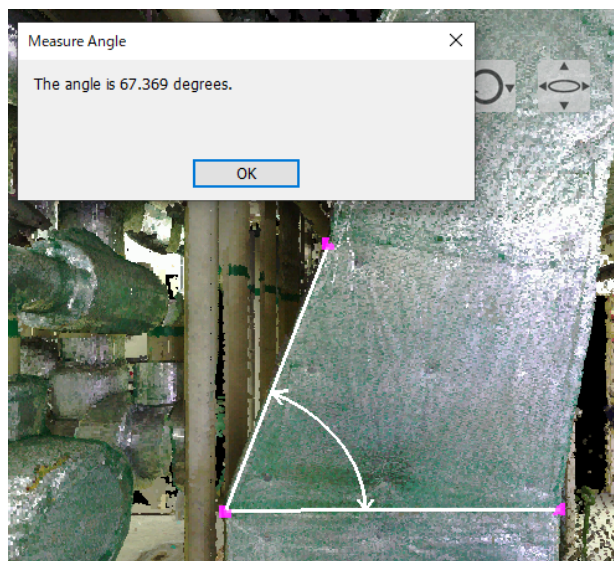




4. To measure the angle among 3 points, select any 3 points among the cloud vertices and reference points on "3D View" window.



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.

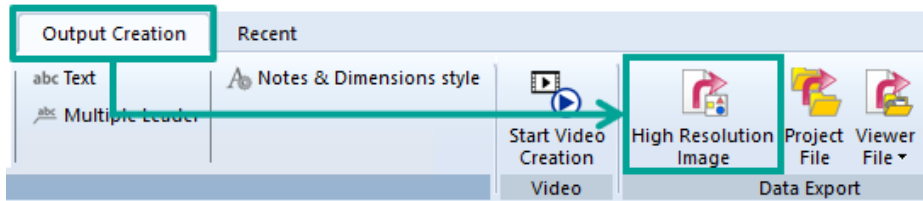


## 4. Exporting Files

### 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].

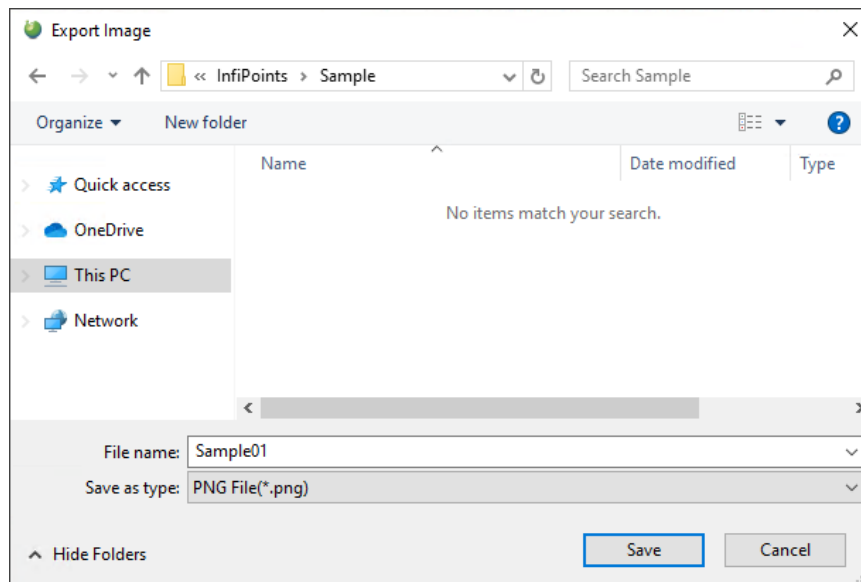
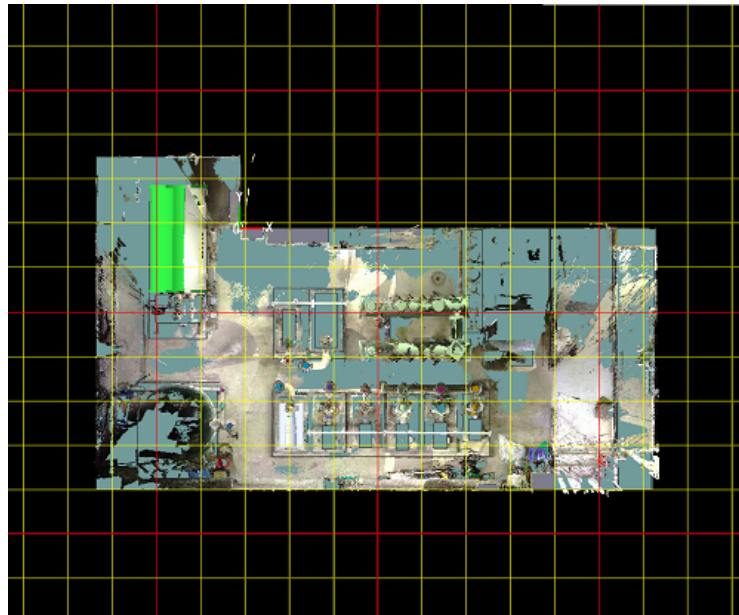


Image file will be exported in .png format.



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