Jinzhou CNC

3D套料软件使用说明文档版本更新记录

更新日期	最新版本号	更新日志	备注
2024-11-19	V1.0.0	金洲数控3D套料软件用户使用说明书	

User Manual of Jinzhou CNC 3D Nesting Software

Version: 2.00

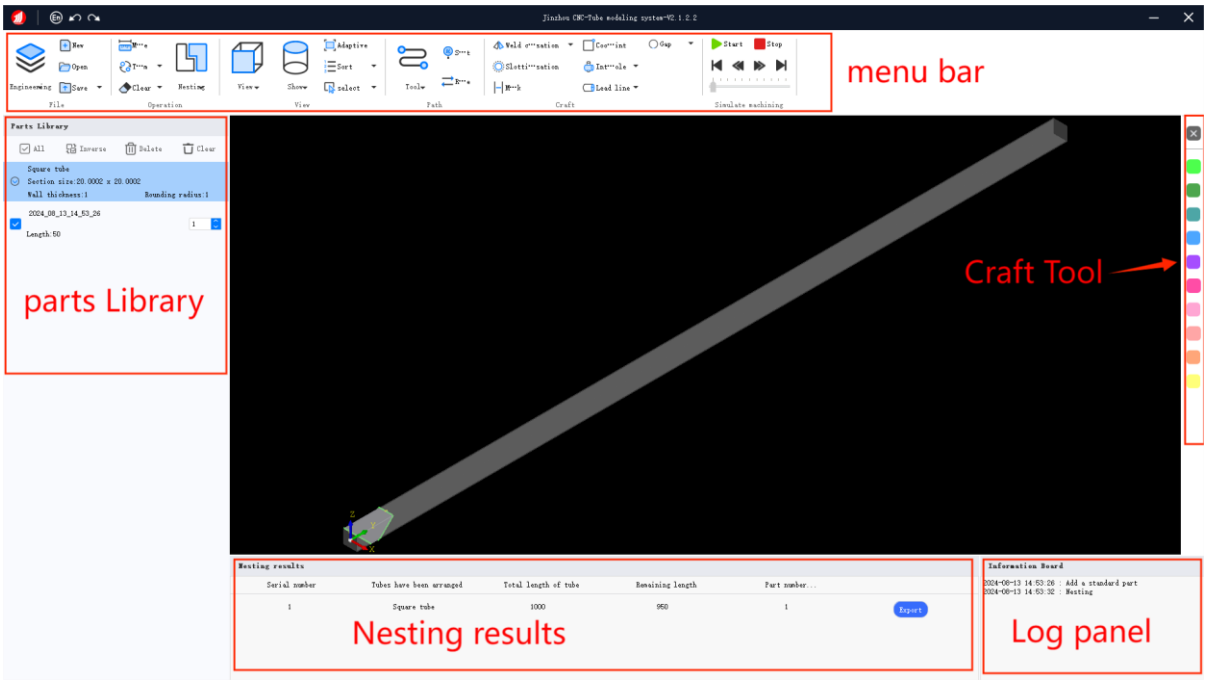
catalogue

Jinzhou CNC

一. Quick use

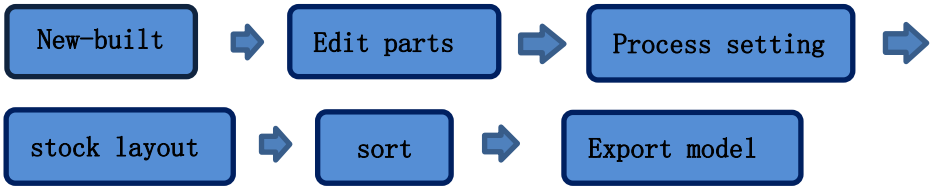
This chapter aims to demonstrate the use process of Jinzhou CNC 3D Nesting software, specific details and cases will be explained in the following sections.

1.1 user interface



At the top of the initial software interface is the menu bar, you can see the software functions and process Settings, the bottom of the menu bar is the view area, you can clearly see the current state of the parts, the bottom is the log area, you can see all the operation information just performed, the left side of the interface is the parts library. In the part library, you can select all, reverse selection, Delete, and empty, and select the parts to be arranged by checking or not, and set the number of parts to be arranged.

1.2 Use the process

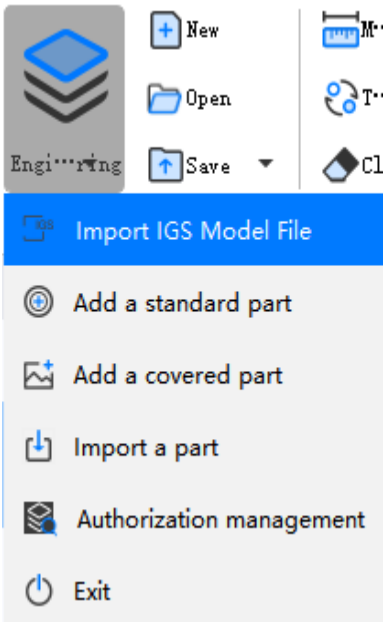


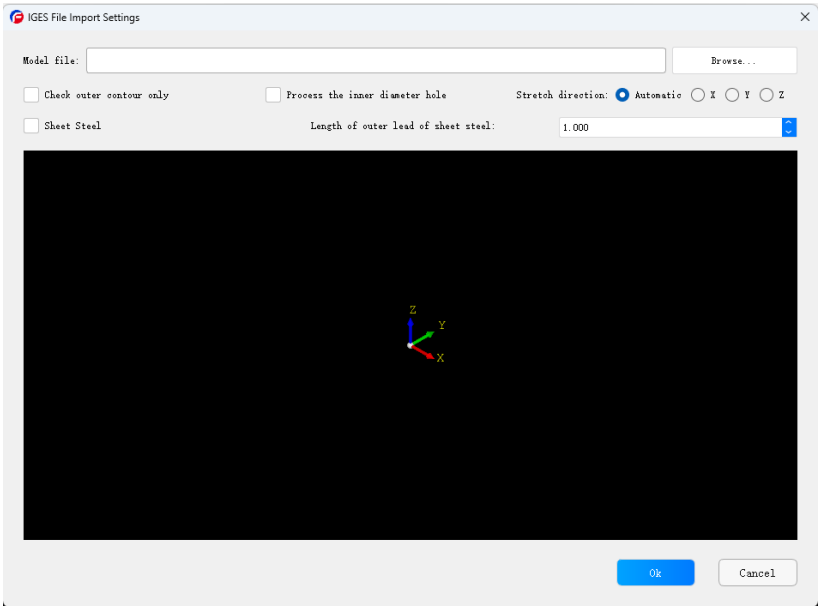
The most common use process of Jinzhou CNC 3D set material software is shown above, and the common operation steps will be demonstrated next.

1.2.1 Edit parts (two ways)

1.2.1.1 Import the IGS model file

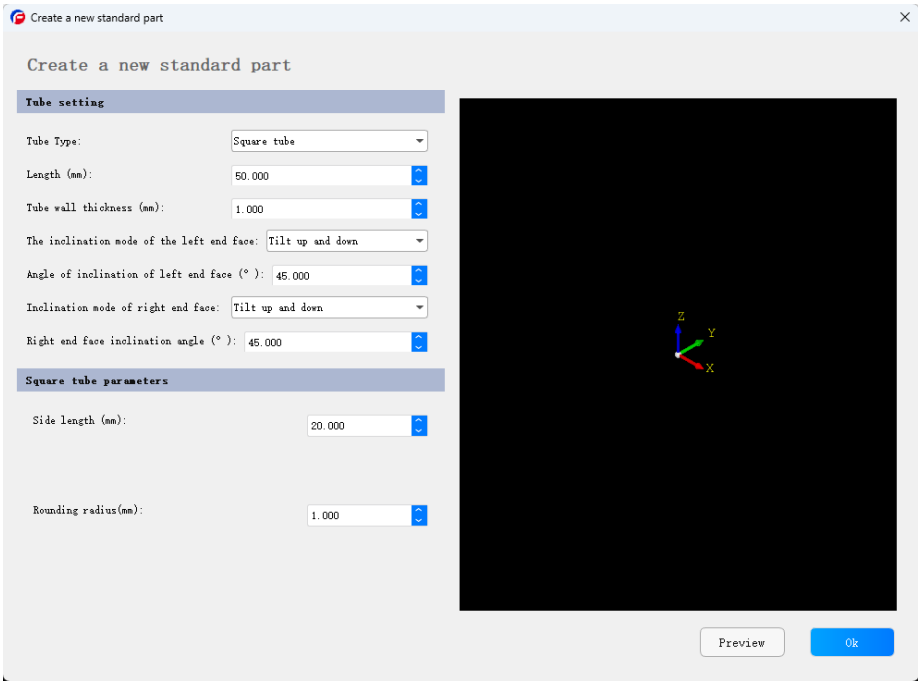
Click the "Engineering" button in the upper left of the menu bar, and click "Import IGS Model File" in the drop-down menu to import the part drawing. In the IGS File Import Settings dialog box, find the Model File, select the location of the part drawing (can be IGS, S TEP format), select and confirm the "tube type", "round" or "inverted", "radius", "thickness", "stretch" parameters of the imported part, click the "OK" button to import the part drawing into the software.





1.2.1.2 Add standard parts

The Add Standard Part is used to quickly draw a standard part. Set the type of pipe in the pop-up "Pipe Settings" dialog box, and set the parameters such as material, length, radius, pipe wall thickness, end surface tilt Angle, end surface tilt mode, and view them by pressing the mouse button in the preview window.



The parts drawing are as follows:

1、 First, click "Engineering" and click "Add Standard Parts" under the project to build a new part. In the pop-up "pipe setting" window, you can see the type of supervisor, material, total length of pipe, thickness of pipe wall, unit (mm), left and right tilt Angle and other parameter information.

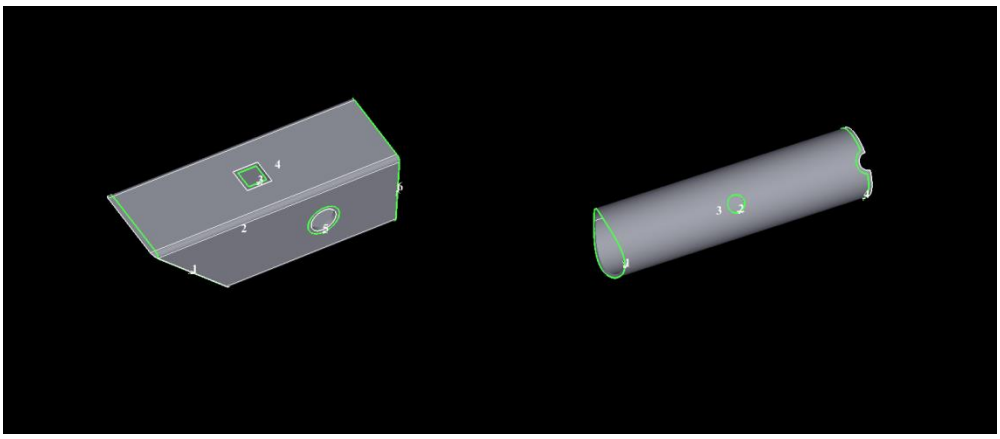
2、 As the parameters change, click "preview" to see the corresponding graph.

3、 Hold down the middle mouse button in the preview window to rotate the graph freely.

4、After setting all the parameters, finally click OK to generate the part to be processed, and the part is automatically imported to the part library.

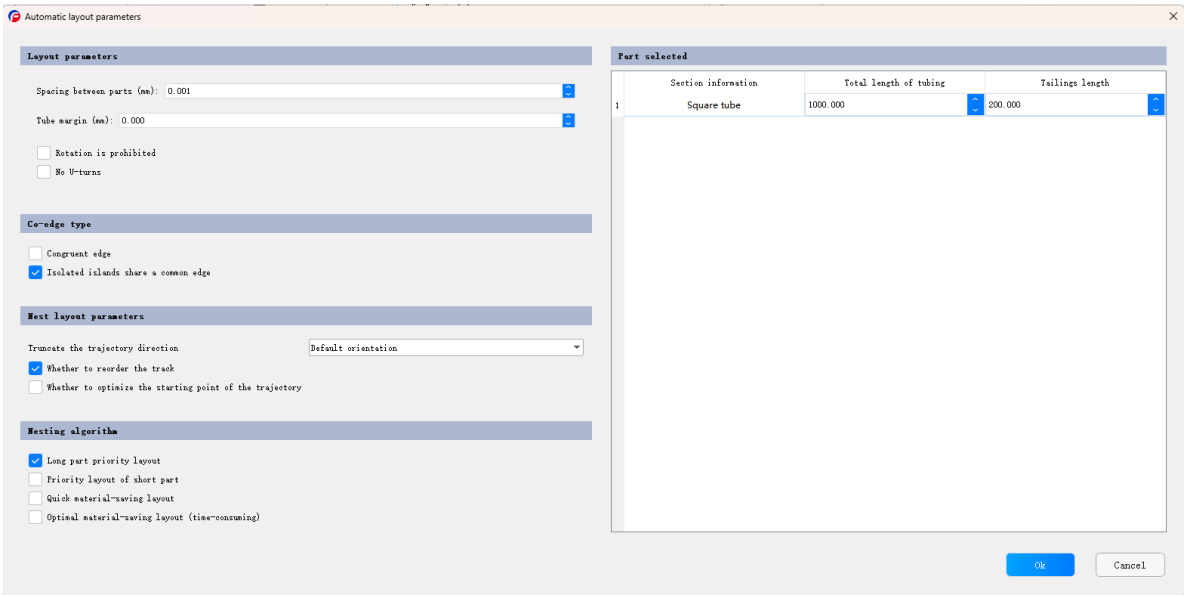
1.2.2 Process setting

According to the processing needs of users, the graphics processes such as starting point, track direction, cut seam compensation, weld compensation, lead knife line, setting micro-connection, and special processes such as phase penetration hole are added.



1.2.3 stock layout

Select the parts to be arranged, set the number, then click "sample", set the automatic sample parameters and start the layout.



1.2.3.1 Sample arrangement parameters

① Part spacing: minimum spacing maintained when the part is not common

② Pipe edge: the reserved spacing between the first part and the pipe head.

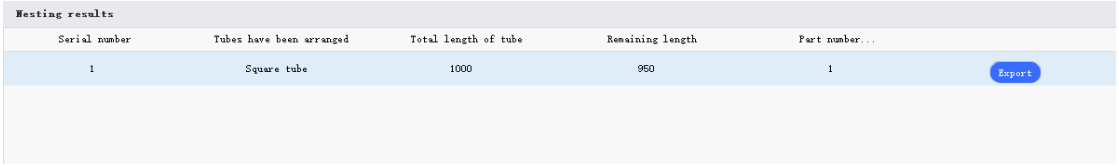
③ Prohibit rotation: Parts are not allowed to rotate along X, Y and Z axes during arranging.

④ No U-turn: a part U-turn is not allowed during proofing.

⑤ Round tube rotation at any Angle: if it is a round pipe part, it is allowed to rotate at any Angle along the Y axis to discharge more economical results

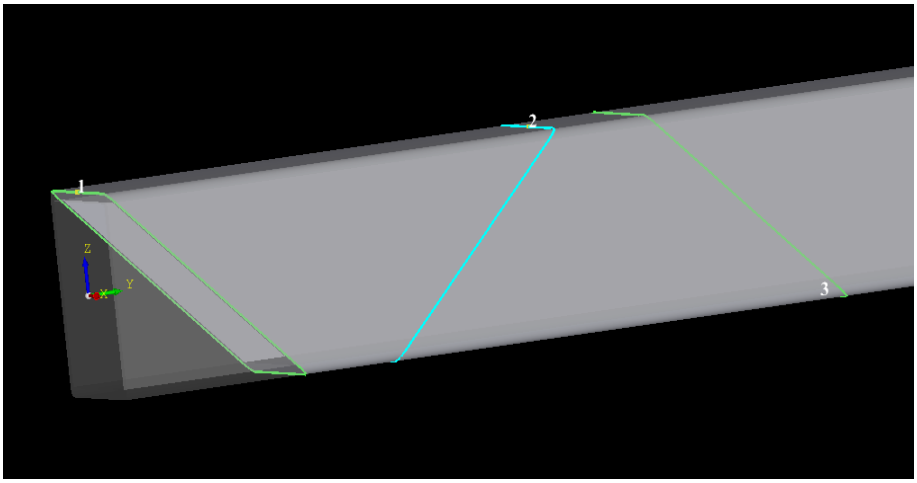
⑥ Pipe total length: pipe length.

⑦ Tail material length: when the tail chuck moves to the closest middle chuck, from the tail end of the pipe caught by the claw to the pipe length directly below the cutting head

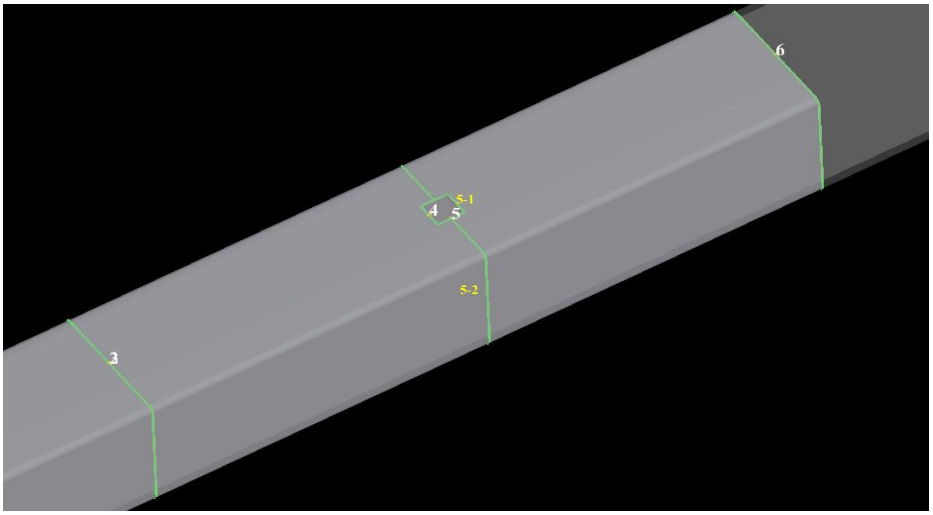


1.2.3.2 Co-edge type

① Equequalateral: euequalateral refers to the situation where the cutting line of two parts can completely coincide



② Island sharing: the boundary of two parts on the existence of waste line is island sharing



1.2.3.3 After sample arrangement parameters

① Truncation trajectory direction: set the truncation trajectory direction, one positive and one negative, all positive or all negative.

② Whether to reorder the trajectory: reorder the trajectory after the arrangement.

③ Whether to optimize the trajectory starting point: to optimize the trajectory starting point of the trajectory after sampling.

1.2.3.4 Sampling algorithm

① Priority arrangement of long parts: priority arrangement of long parts.

② Priority arrangement of short parts: priority arrangement of short parts.

③ Rapid material discharge: quick sample of parts, short time.

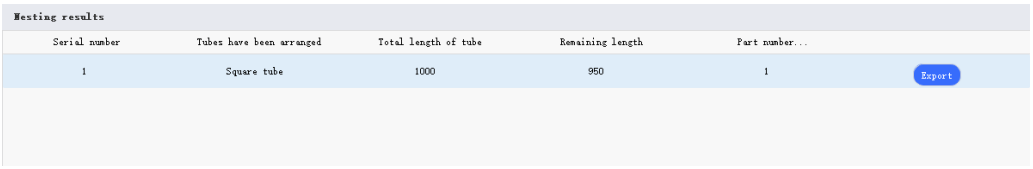
④ Optimal material discharge: according to the optimal material discharge of parts, time consuming.

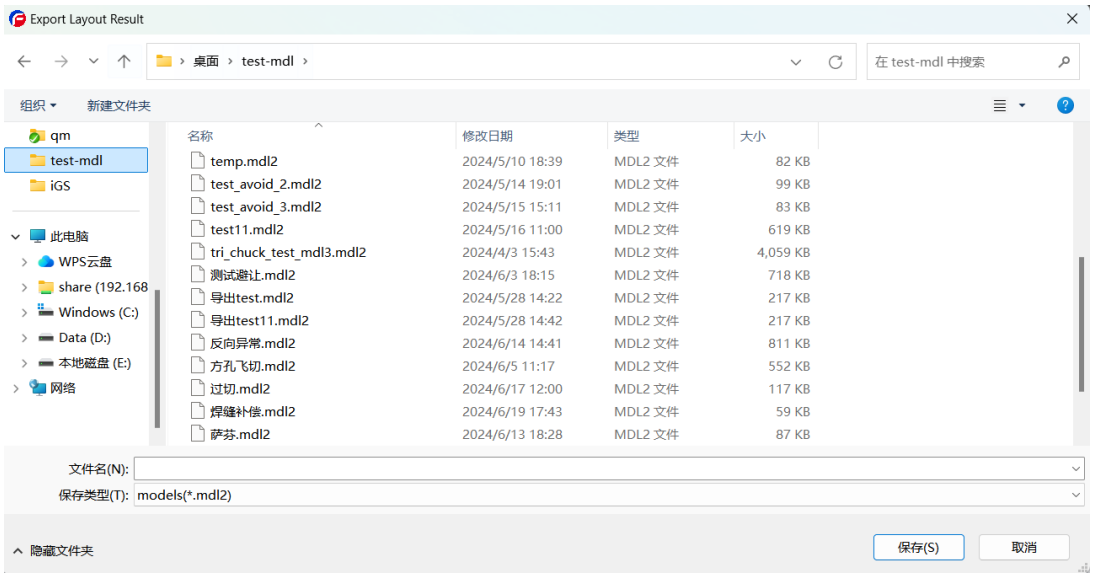
1.2.4 sort

For the sample arrangement results, click "sort" for automatic or manual sorting.

1.2.5 leading-out

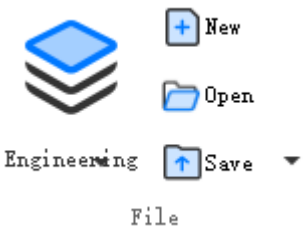
Right-click the sample result, export, select the sample result, select a folder, and save the sample result under this folder with the file format ".mdl2"。



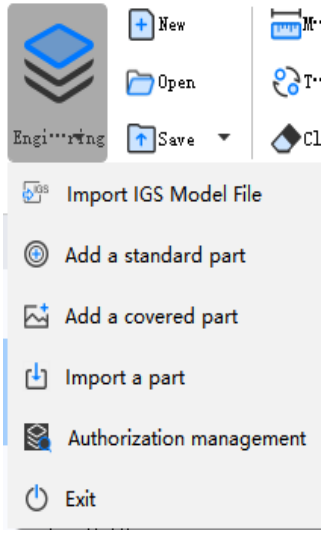


二. function Introduction

2.1 document

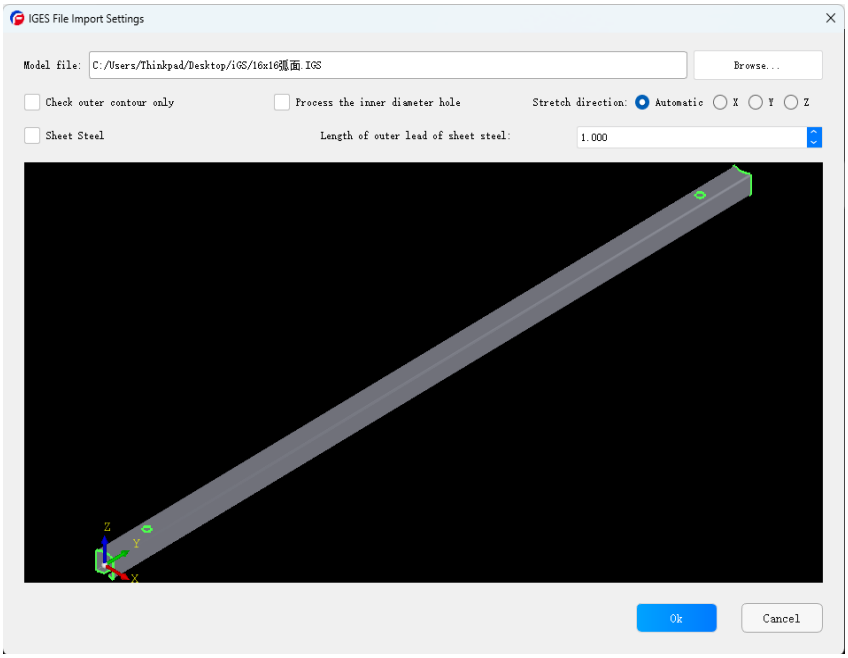


2.1.1 engineering



2.1.1.1 Import the IGS model file

Click Import IGS Model File to open the Add Part window and open the drawing to process the part.



"Import IGS Model File" is a common way to open files in Jinzhou CNC 3D set software, which can be imported in IGS format drawings:

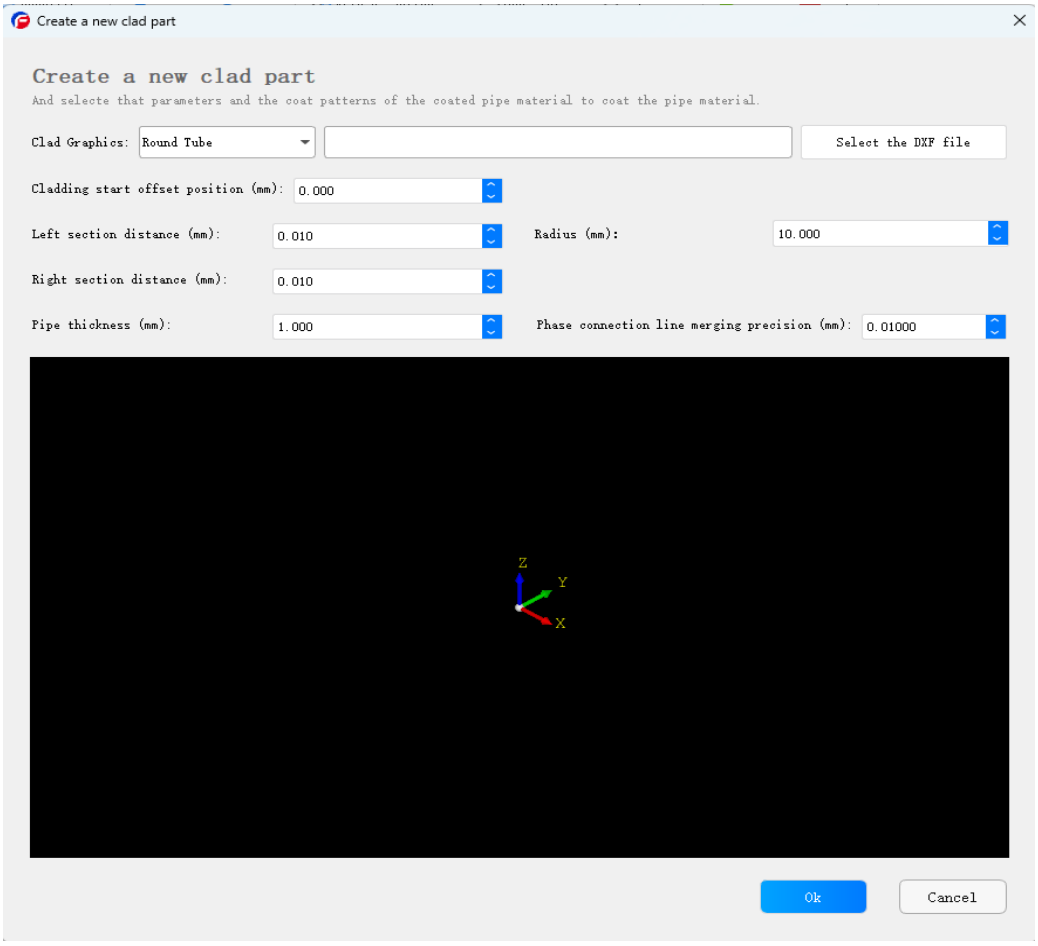
IGS: support IGS format files saved by SolidWorks (the stretching direction should be in the same direction as X / Y / Z axis);

2.1.1.2 Add standard parts

1.2.1.2

2.1.1.3 Draw covered parts

The Draw Crap Part covers the dxf sheet directly to the supervisor. Click the "Project" drop-down menu, click "Add coated file", open the "standard fittings" window, select the coating graphic type in the window, select the location of the DXF file, set the part length, pipe length, radius, unit, coating position, left section distance, right section distance and pipe thickness. After setting all parameters, finally point "OK" to generate the parts to be processed, and the parts will be automatically imported into the parts library.



2.1.1.4 Import parts

Importing IGS graphics and adds standard parts. After the part library generates the model, right-click the mouse on the model and click the export model (as shown in the figure). After exporting the model that can only right-click at one time, click the imported parts and import them again.

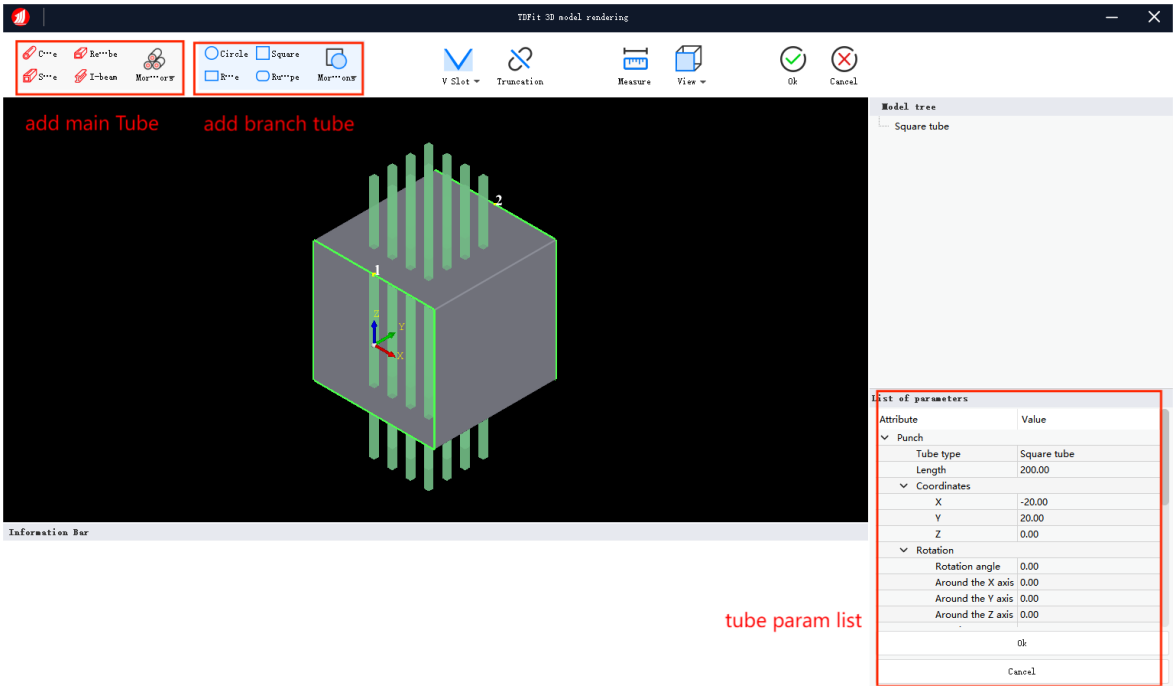
2.1.1.5 open

Open the saved. File in the mpkg file format.

2.1.1.6 withdraw from

Turn off the modeling upper computer software.

2.1.2 new-built

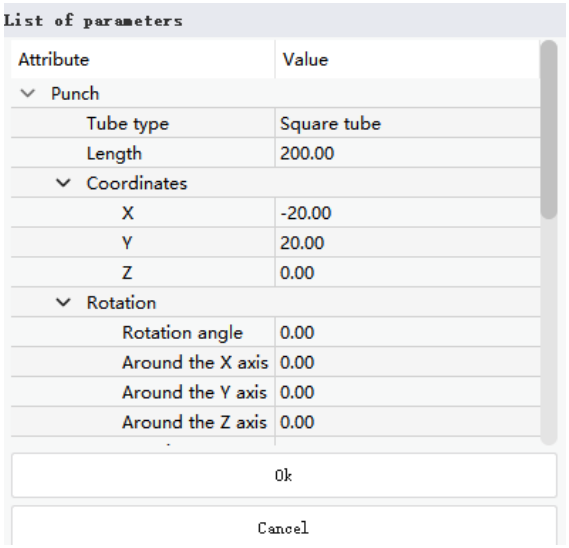


① Add Main Tube

Select the main Tube type to add and set the tube section profile and length information in the tube parameter list area.

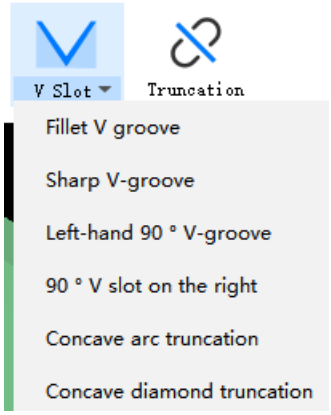
② Add branch tube

Select the branch pipe type to add, set the branch pipe section profile and length information in the pipe parameter list area, and you can also set the coordinates, rotation angle, array, etc.



③ Add V slot

Add a V slot to the supervisor



④ Add truncation

Add truncations on the supervisor

2.1.3 open

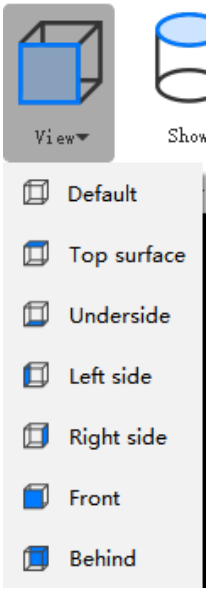
You can open a saved *.mpkg document.

2.1.4 preserve

use. Save the parts and sample results of the part library and sample results.

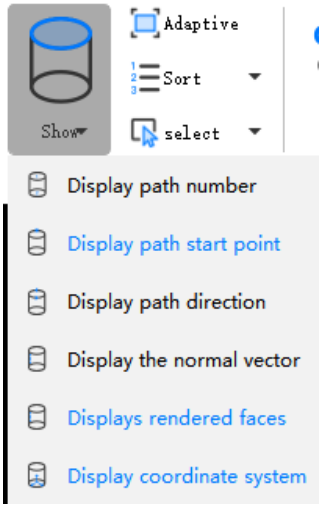
2.2 view

2.2.1 Switch view



Click the View button, and then select the desired view direction.

2.2.2 show

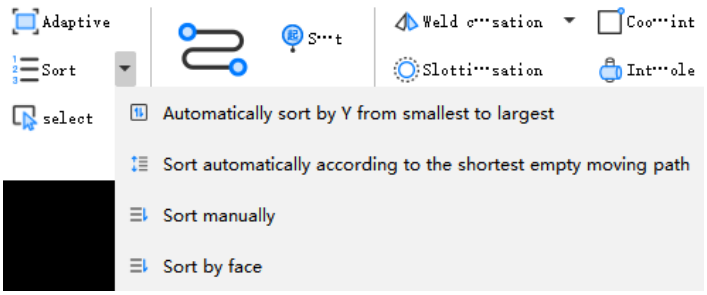


Select the information that you need to display.

2.2.3 self-adaption

Whether the current view is zoin or out, no matter what the original adjustment angle, press "F4" or click "adaptive" to restore the default view direction and size.

2.2.4 sort



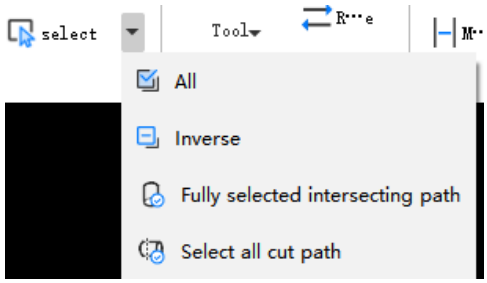
① Automatic sorting according to Y from small to large: start from the Y value near the starting section, move along the direction of the pipe to the other end of the pipe, and the order of the graph is the order of arrangement.

② Automatic sort by the shortest blank path: sort the graph by calculating the shortest blank path.

③ Sort by surface: Sort by surface is suitable for rectangular tubes, square tubes, and special round tubes. This sorting strategy will prioritize the graph on the same surface together, rank on each surface according to the strategy of Y to large and clockwise, and process one surface and then transfer to another surface, so as to reduce the number of rotation.

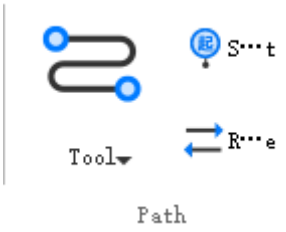
④ Manual sorting: When the above automatic sorting strategy still cannot meet the requirements, manual sorting can be used to manually set the cutting order. Click the manual sorting, then you can use the mouse to click the graph according to the expected order, the sorted graphics will become green, can generate a custom order.

2.2.5 select

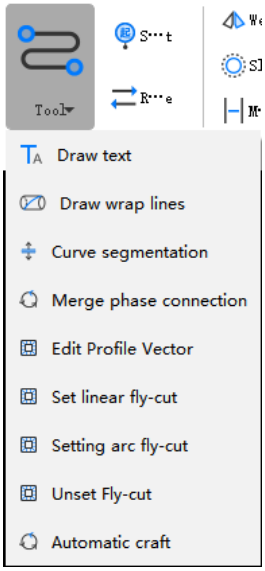


For the model displayed in the current window, click select, reverse, select consistent trajectory, and cut off trace. You can quickly select the desired track.

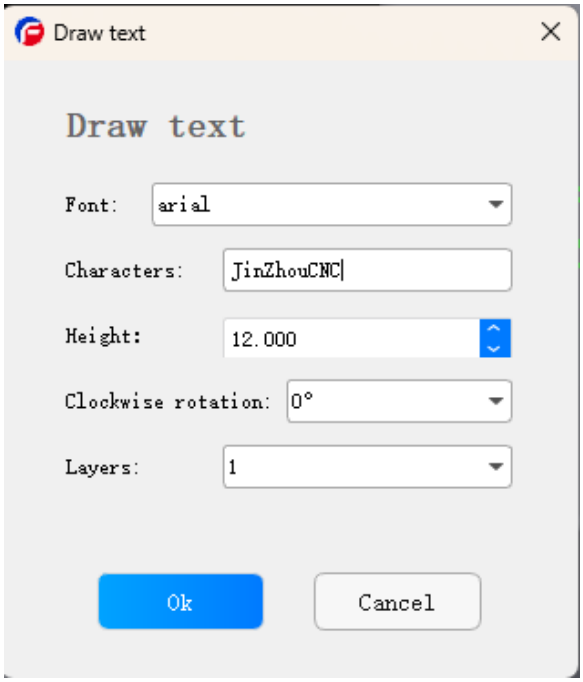
2.3 trajectory



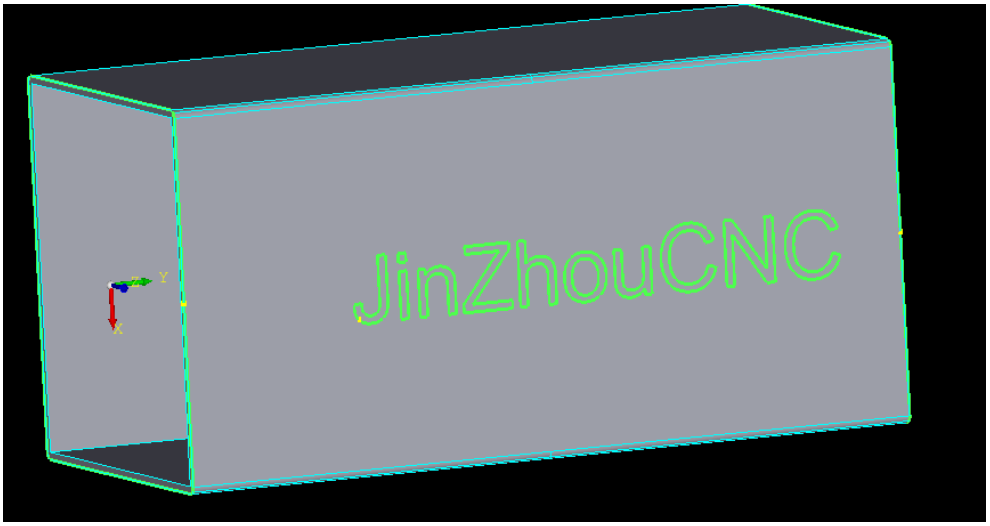
2.3.1 tool



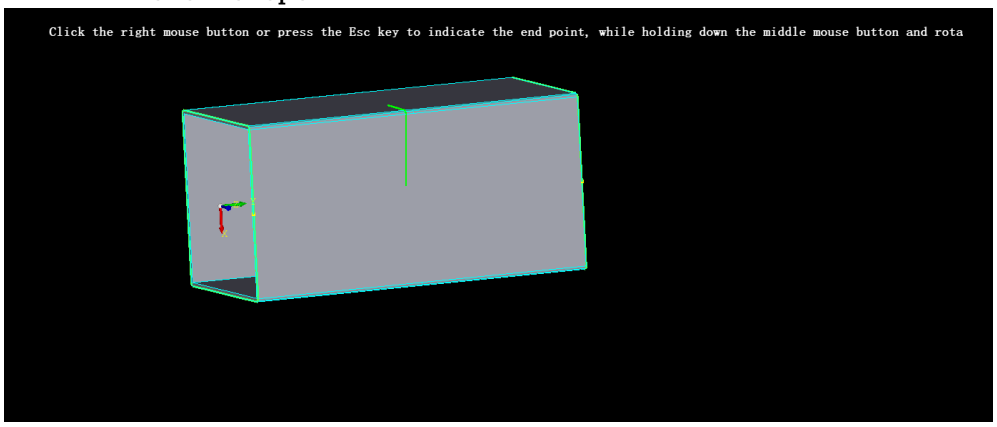
2.3.1.1 Draw the text



Open "Draw Text", select the font, set the text content, set the font height, font rotation direction and layer, click OK, and move the mouse to add the text where you need to draw.



2.3.1.2 Draw the envelope



Click the right mouse button or press the ESC key to indicate the end point, while holding down the middle mouse key and rotating to adjust the envelope number.

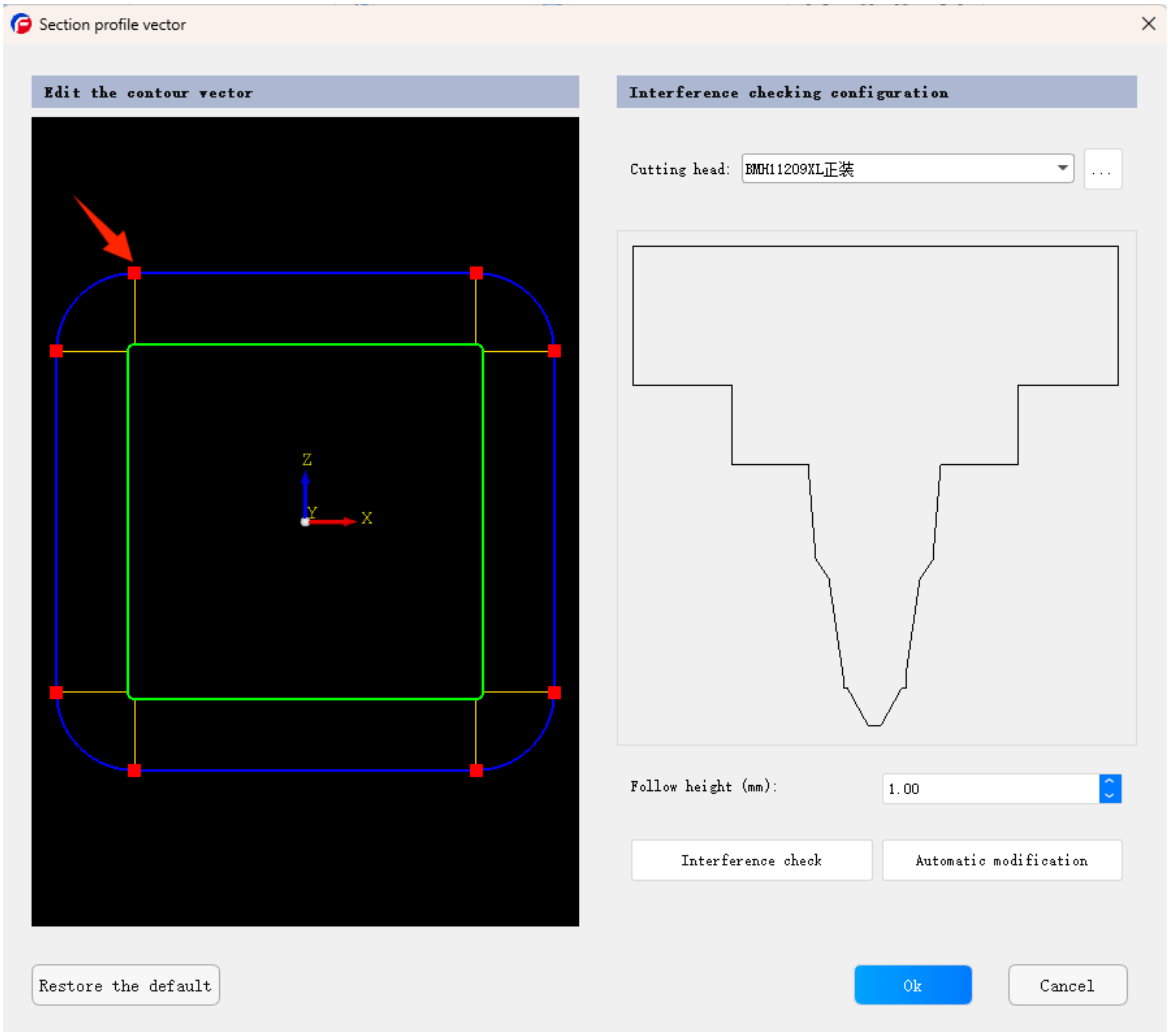
2.3.1.3 Curve segmentation

After clicking the curve segmentation, click the position to be divided on the track, and the track will be split into two tracks.

2.3.1.4 Merge connected lines

Select the tracks that need to be merged and click on the merged connected line. The multiple connected tracks will be merged into one track.

2.3.1.5 Edit the section profile vector



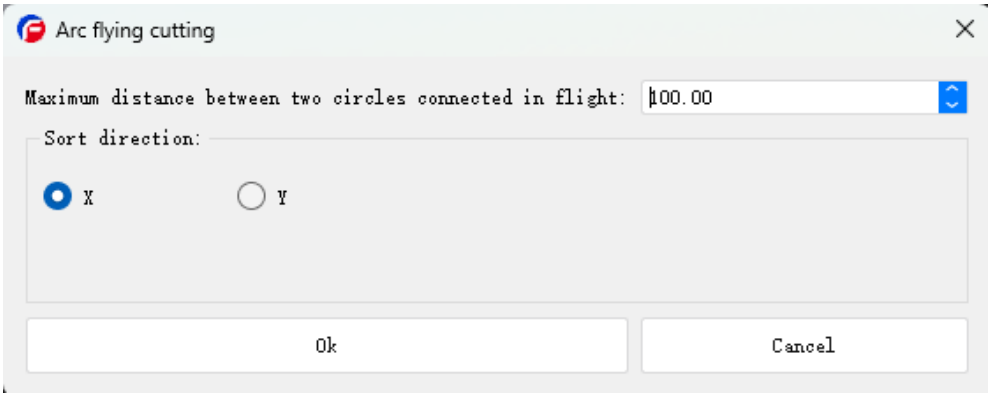
Click to edit the section profile vector, and the section normal vector can be adjusted by dragging the adjustment point. After the adjustment, click the interference check can judge whether the currently selected cutting head profile and pipe are interfered or not.

2.3.1.6 Set the straight line to fly

Cut rectangular holes on pipes (whether round or rectangular).

Allowable distance deviation: When a flying tangent connects a segment on the same line, the distance deviation from the line that is less than this set value is also planned to this flying cut path.

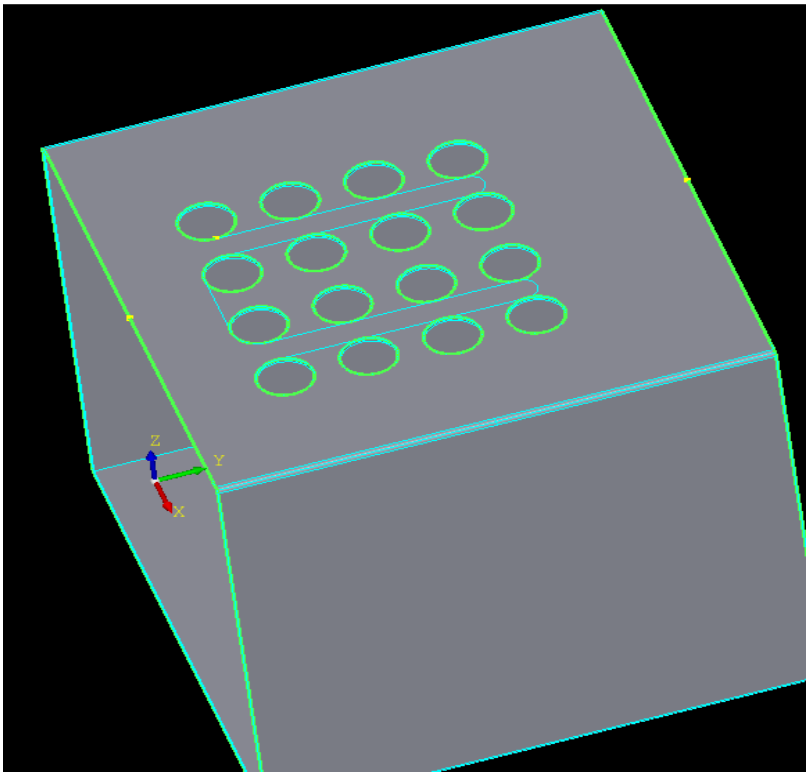
2.3.1.7 Set the arc to fly and cut



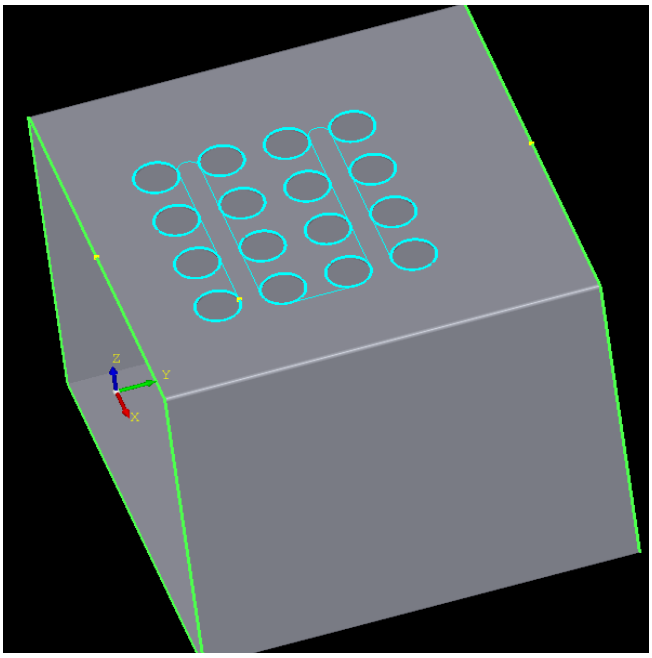
Use a circular arc to cut regularly arranged circular holes on pipes (whether circular or rectangular).

Maximum spacing between two circles: when the starting distance between the round holes is less than the set parameter. It is recommended that this parameter setting is slightly larger than the distance between the round holes.

① Fly cut along the Y direction.



② Fly cut in the X direction.

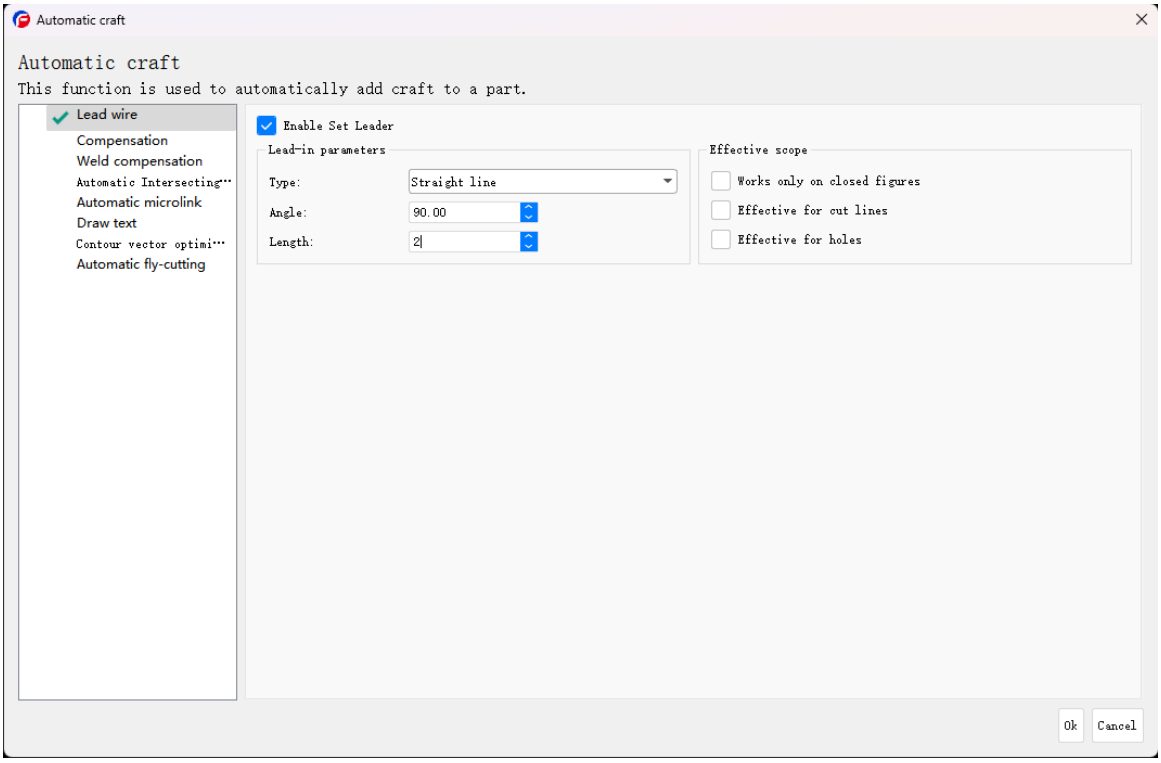


2.3.1.8 Unset fly cut

After generating the tangent, if you want to adjust the tangent parameters, you must select the part and click "Cancel the flight cut" before generating a new tangent.

2.3.1.9 Automatic process

The automatic process set before parts import will be added to the subsequent imported parts to achieve the effect of batch addition process.(If the part has been imported into the software and the automatic process is added to the later part and the imported part will not be added automatically.)



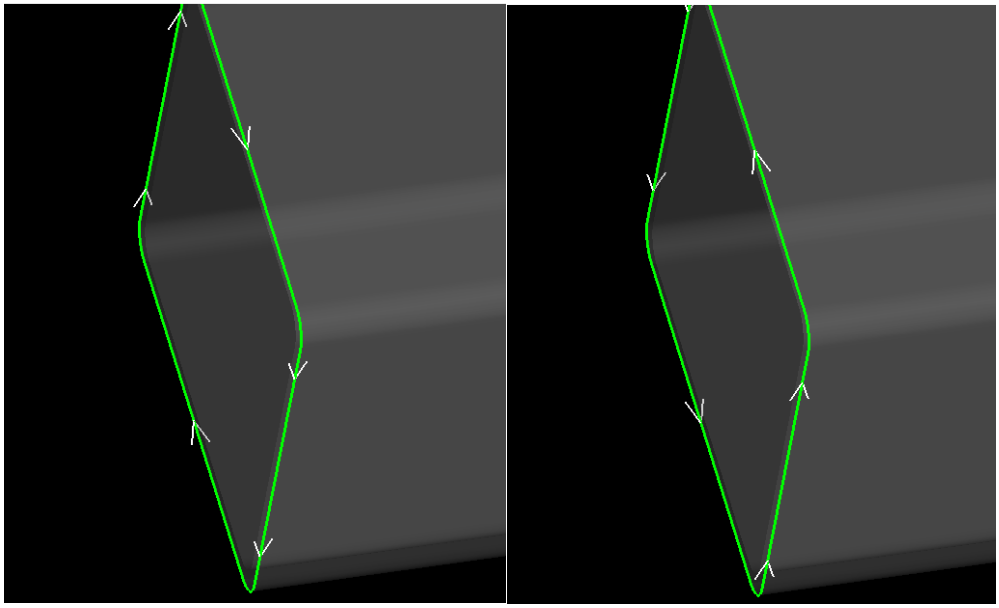
2.3.2 origin

A Starting point is the starting position where a graph can begin processing. Open the Show drop-down menu and check "Show Path Start". The yellow point on the drawing is the starting point.

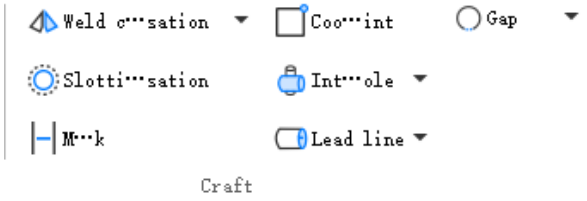
Depending on the process, click Start Point and then click anywhere in the drawing to specify the start point.

2.3.3 opposite direction

"Reverse" can reverse the trajectory movement in the processing figure. Setting method: First select the track that needs to be reversed, the track will become white, and then click "reverse", the reverse setting is complete.

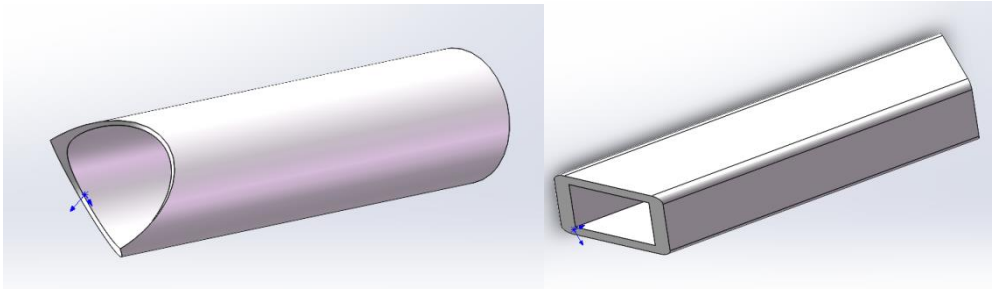


2.4 technology

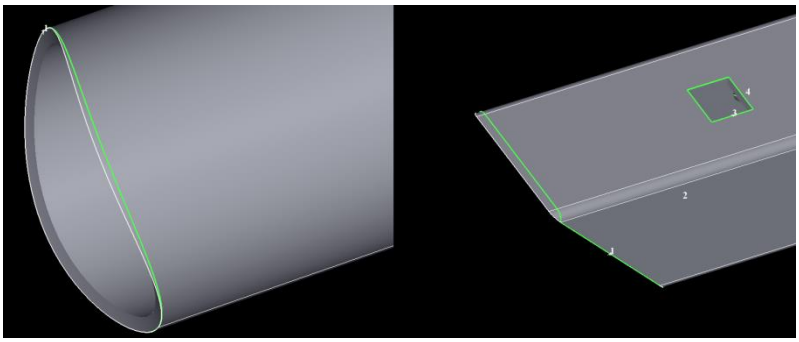


2.4.1 Set up the weld compensation

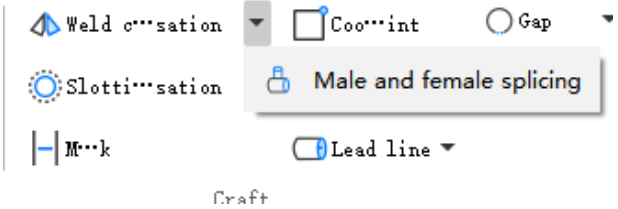
Since the ordinary laser cutting is in the direction of the Z axis and the pipe along the Y axis, the cutting of the pipe wall is always perpendicular to the XOY plane. As shown in the figure below, when the parts need to cut the pipe wall out of a certain Angle, the ordinary laser cut cannot cut out the slope, resulting in the actual parts in the subsequent splicing, and cannot be perfectly splicing.



Select this kind of knife path and click the "Add weld compensation" button in the "process setting" button. The software will automatically calculate the appropriate knife path according to the section information, so that the processed parts can be assembled normally.

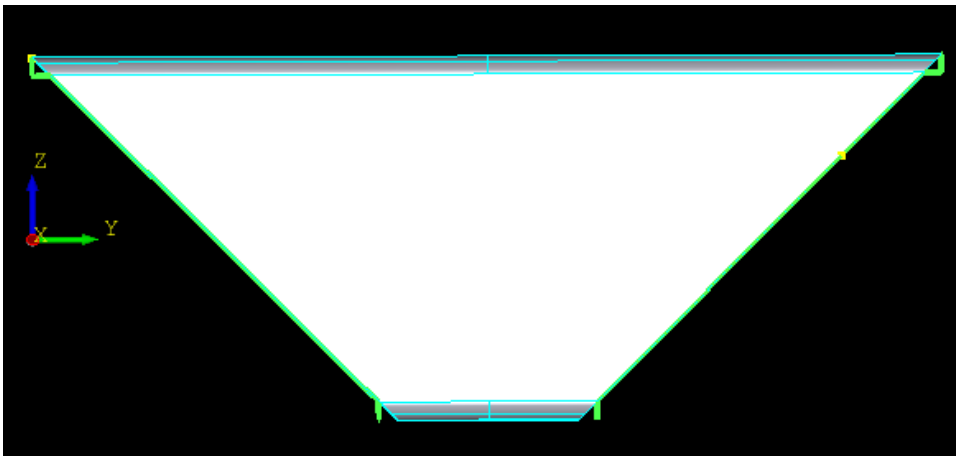


2.4.2 The male and female splicing

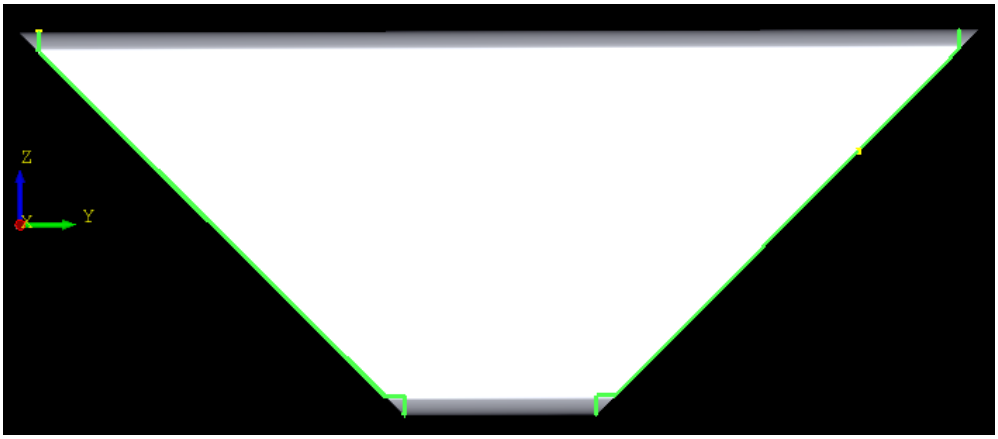


By changing the knife path, the oblique cut parts are divided into two different shapes: the male and the parent, so as to realize the L-type splicing of rectangular tubes.

The public head is as follows:



The mother head is as follows:



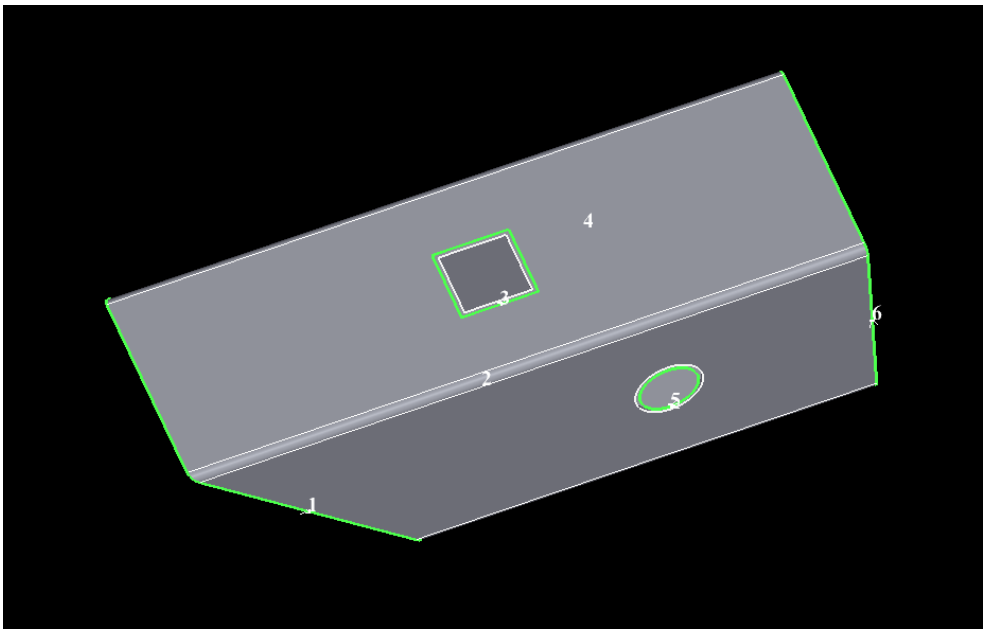
2.4.3 Set up the cut-joint compensation

Because the laser cut seam of laser processing has a certain width, the original size of processing will lose a part of the material, so that the size of the parts is slightly smaller than the drawing, the size of the inner hole is slightly larger than the drawing. In order to ensure the accuracy of the parts to make up for the cutting joint process is called compensation.

Click Cut Cut Compensation to add compensation to the selected drawing or part.

Compensation value is generally set at half the value of laser slit width according to actual needs; the effective range can be selected flexibly. The internal contraction and external expansion in the style refers to the compensation logic. Generally speaking, the internal contraction is used for the tube face and the external expansion is used for cutting the line. The automatic judgment refers to the automatic contraction compensation for the inside of the tube face and the external expansion of the cut line. As shown in the figure, the white line is the original figure and the green line is the compensated trajectory.

It is recommended that the compensation be done before the sample arrangement, because it may change the spacing between the parts and even cause knife overlap.



2.4.4 Set the cooling point

When the processing goes to the cooling point, the software will control the cutting head to stop at the cooling point and stop the air to achieve the cooling effect. In the Jinzhou CNC 3D set software, click "cooling point" to add a cooling point process for the graphics (after use to press the ESC key or mouse point right button exit function), open the "Clear" drop-down menu, check "Clear cooling point" to clear all the cooling points of the selected graphics or parts.

Setting method: First select the track that needs to add the cooling point, and the track will turn white, and then click "cooling point", and then click on any position of the selected track to set the position of the cooling point, and the cooling point is set.

2.4.5 Set the micro-even

Microconnection refers to a small section of the original processing track, and this small section of the unsevered connection can keep the part or shape to be dropped on the mother tube.

Click Microlinks to add microlinks to the graph (press ESC or right mouse button after use).

2.4.6 Set the lead wire

The lead line, also known as the lead, puts the starting point into the waste area by adding a small section of processing track, so that whether the starting point is punched at the starting point or not, it can ensure the integrity of the parts at the start point to the greatest extent.

When you select a drawing or part, you can click Guide Line to add leads to the currently selected drawing.

Among them, the lead type can be selected as a straight line or as a circular arc as needed.

The lead positions of the cut face and the tube face should be set separately.

The position of the lead is determined by the angle from the X-axis, which refers to the counterclockwise angle from the X-axis to the target position in the main view.

2.4.7 Lead inside and outside the knife line

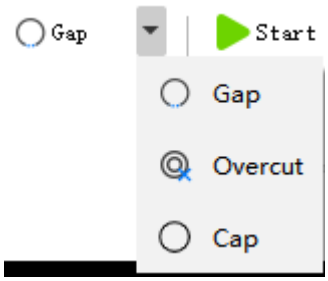
Inside and outside the direction of the lead is Yin or Yang cut.

Setting method: first select the processing track of the set lead, the track will be displayed as white, and then open the "process Settings" drop-down menu, click "inside and outside", the lead will automatically switch to the direction of the need, if the original Yang cut, will automatically switch to Yin cut, if the original is Yin cut, will automatically switch to Yang cut.

2.4.8 Phase through hole

Under normal circumstances, when machining the hole on the arc surface, the rotating shaft of the pipe cutting machine will rotate, and the cutting head and the pipe surface will remain 90 degrees vertical. Due to the wall thickness, the aperture of the outer wall and the inner wall are not consistent, so the branch pipe equal to the aperture can not be completely inserted into this hole. If you want to cut the hole on the arc surface vertically, add the coherent hole process to the cutting hole. The rotation axis is not turned when processing the coherent hole.

2.4.9 Gap / cut



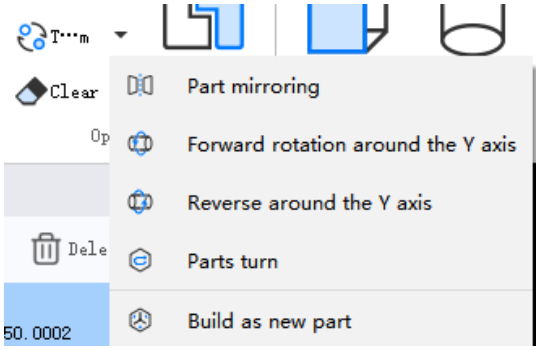
Select a drawing to click the drop-down box in the drawing to adjust whether the drawing is closed, notch, or overcut. The default drawing is the seal, which means that the end point overlap; the start and end point of the notch do not overlap. The difference is that the gap is cut less and the notch is cut more.

2.5 operate

2.5.1 measure

Click the Measurement tool to measure the distance from point to point, line to line.

2.5.2 transform



① Part mirror: Part will be selected for YOZ, flat mirror.

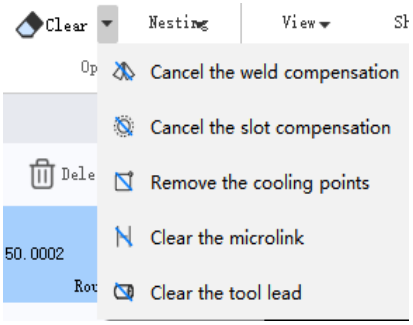
② Turn around the Y axis: turn the selected part forward 90° around the Y axis.

③ Reverse around the Y axis: the selected part reverses 90° around the Y axis.

④ Part U-turn: rotate the selected part for 180° around the X-axis.

⑤ Born to be a new part: select born to be a new part, click the part mirror to rotate around the Y axis, part turn around will generate a new part.

2.5.3 clean up



Select the track to clear the process, open the clear drop-down box to select the process to be cleared, and click to clear all the corresponding processes of the selected track.

2.5.4 stock layout

Detailed use of reference 1.2.31.2.3

2.6 Simulation processing

Simulate machining

To simulate the processing of the cutting head on the pipe, you can clearly see the cutting order, direction and other information. Click Start to start cutting the current part or sample result, and if some drawings are selected, only the selected ones. In the simulation state, click "" to adjust the simulation speed, and drag "  " to change the current simulation progress.

2.7 Layer tools

2.7.1 Effective / invalid

Effective / invalid means to set the processing track processing or not processing; select the track, click "  ", the track will not be cut and the track becomes white. If you want to cut the track again, just select the track and assign a color layer to the track.

2.7.2 layer

Each color, representing a layer, that is, a process.