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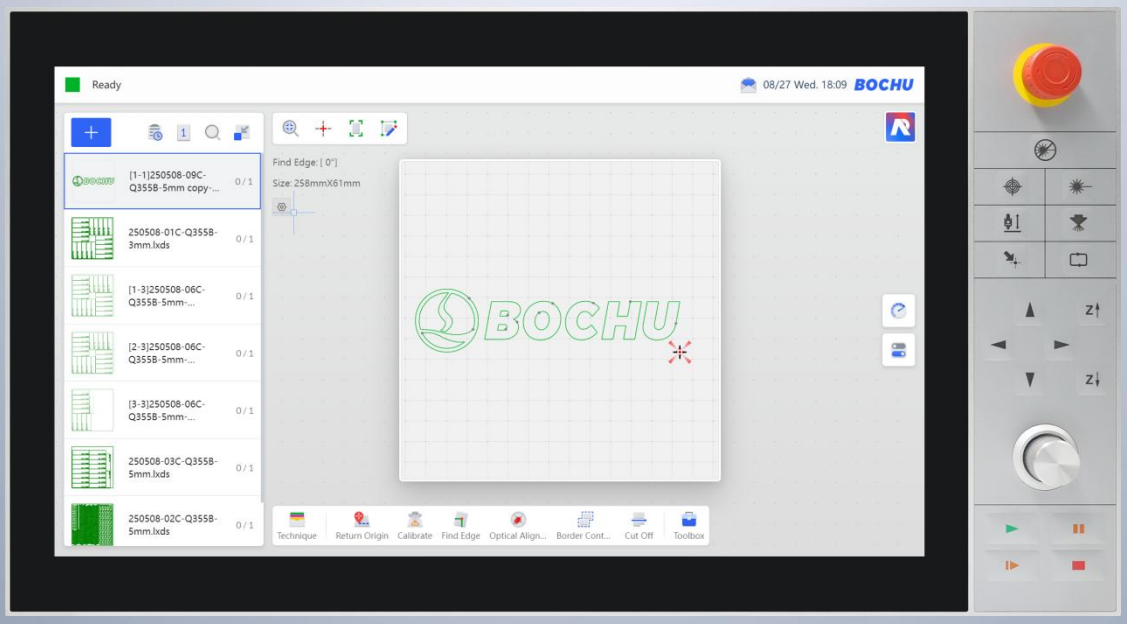


# HypCutRevo Laser Cutting Control Software User Manual

System: FSCUT8000APLUS+

Software Version: 10.2502.2.0

Document Version: V1.1.0

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# Foreword

Thank you for using BOCHU HypCutRevo Laser Cutting Control Software!

BOCHU HypCutRevo Laser Cutting Control System (hereinafter referred to as HypCutRevo) is a comprehensive laser cutting solution designed for flat metal plate processing. Integrated with BOCHU HyPanel2 EtherCAT CNC Host, this system delivers robust production, commissioning, and maintenance capabilities, coupled with an intuitive human-machine interface (HMI).

HypCutRevo mainly includes modules for production task management, laser cutting technique management, laser machining control, intelligent auxiliary functions, maintenance management, and diagnostics. When paired with the BLT Intelligent Cutting Head and AR Vision Module, HypCutRevo leverages artificial intelligence algorithms to enable advanced features such as molten pool monitoring, closed-loop kerf adjustment, and automatic drawing-to-plate visual matching.

Only when used with HyPanel2 EtherCAT CNC Host and a valid license can HypCutRevo realize machining control. Unauthorized execution on non-licensed IPCs or other computers will restrict functionality to OFFLINE mode, disabling real-time machining control.

This manual is intended only as an instruction manual for HypCutRevo core operations. For auxiliary tools or advanced permissions installed with the software suite, consult other manuals or contact technical support.

This manual is based on HypCutRevo 10.2502.2.0. Due to the continuous update of system functions, the actual situation may differ in some aspects from the statements in this manual. We've tried our best to ensure that the content is applicable, but we reserve the right of final interpretation. Changes in the content of this manual will not be explicitly notified.

For any questions or suggestions during use, please contact us through the information provided.

**Convention Symbol Explanation**

Notice: Provides supplementary explanations or clarifications for the product

Caution: Indicates that non-compliance with the instructions may result in minor injuries

or equipment damage.

Warning: Indicates that non-compliance with the instructions may result in severe injuries or death.

Danger: Indicates that non-compliance with the instructions will result in severe injuries or death.

**Declaration**

The operation of the machine tool and the laser cutting effect may directly relate to the material being cut, the laser used, the gas used, the gas pressure, and the various parameters you set. Please set various parameters carefully according to your cutting process requirements. Improper parameter settings and operations may lead to poor cutting effect, damage to the laser head, or other machine tool components, and even personal injury. HypCutRevo Laser Cutting Control System has tried its best to provide various protection measures. Laser equipment manufacturers and end users should try to follow operating procedures to avoid the occurrence of injury accidents.

BOCHU shall not be liable for any direct or indirect losses arising from the following circumstances: damages caused by improper use of this manual or the product, failures to comply with safety operating procedures or force majeure events such as natural disasters.

Additionally, operational equipment carries inherent risks. Users are obligated to implement robust fault-handling mechanisms and safety protections. BOCHU assumes no responsibility for any incidental or consequential losses resulting from such risks.

# Revision History

| Version No. | Date | Description |
|---|---|---|
| V1.0.0 | 2025/05/22 | Initial release of HypCutRevo User Manual for version 10.2510.0.2 (2025A). |
| V1.1.0 | 2025/08/29 | Updated for HypCutRevo version 10.2502.2.0 (2025B).<br>**Key Updates**<br>1. Optimized workflow for Control Center and Machining Technique Settings.<br>2. Added CAD functions for Graphic Drawing and expanded Graphic Techniques and Tools features.<br>3. Added Focus Temperature Drift Offset and Start Cutting from Any Position.<br>4. Introduced the Debug Mode.<br>5. Added Technique Library.<br>6. Added Jog Laser On and Optical Alignment. |
| | | |

# Content

## Features

- Adopts touchscreen-centric HMI to accelerate production workflow.
- Supports industry-standard file format including *.dxf, *.lxd, *.lxds, *.nrp, *.nrp2, and *.nc for rapid task import and technique commissioning.
- The file manager supports batch preview, multi-selected import, and tagging for commonly used files, allowing easy management of processing files.
- Automatic pro-processing when opening/importing external files (such as *.dxf), including ***Delete Duplicates***, ***Join Nearest Lines***, ***Auto Remove Trivial Graphics***, ***Identify Inner/Outer Contour***, and ***Auto Sort***.
- Supports task management, integrated priority-based scheduling, cloud task processing, historical task archiving, and other functions.
- Decoupled architecture for machining control functions and graphic editing tools, ensuring system stability while retaining essential graphic optimization for easy use.
- Supports advanced functions including ***Pierce Monitor***, ***Co-edge Pierce Detection***, ***Vibration Suppression***, ***Molten Pool Monitor*** and ***Auto Center***, when paired with the BOCHU BLT Intelligent Cutting Head.
- Supports automatic technique matching, reducing cumbersome parameter configuration and shortening preparation time.
- Supports technique library for unified management of material data and techniques with custom parameter sets.
- Supports multiple production modes, and achieves needs with high-mix volumes, supplemented by automated modules like ***Capacitive Find Edge*** and ***Breakpoint***.
- Supports AR automated machining workflow, reducing downtime for plate edge finding, framing, and graphic operation, enabling seamless WYSIWYC production with visualization and efficiency.
- Supports real-time monitoring of machining status and limit protection, providing a more complete solution to abnormal status and reducing the impact of abnormal conditions on

machining.

- Supports real-time task status and statistical data for factory management.
- Supports interconnection with the 2D nesting software CypNest to push machining tasks remotely over the network and manage local machining data.
- Supports unified equipment management platform by collecting the statistics of machine tool, cutting head, laser and other equipment, enabling statistics checking, and quick diagnosis and analytic for existing faults.
- Supports smart maintenance ecosystem by tracking equipment operational status, providing maintenance recommendations based on preset thresholds to extend Mean Time Between Failures, prolong equipment lifespan, and preserve long-term performance.
- Supports custom PLC logic editing, enabling user-defined production sequencing and tailored manufacturing workflow.
- Supports programmable safety I/O, enabling assigning input ports for alarm and warning to enhance production safety.
- Supports 17 languages and UI translation editor to meet the need for globalization and localization.

# Safety

To ensure personal and equipment safety, please read the equipment manufacturer's user manual carefully before laser operation, and always follow the safety labels and precautions on the equipment. The safety statements, cautions, and warnings mentioned in this manual serve only as supplementary guidelines for safe laser use and do not cover all safety measures that must be observed.

### Laser Safety Precautions

- Operation is permitted only for trained personnel familiar with the equipment structure, performance, and operating system logic.
- Before operation, ensure full proficiency in software usage and complete understanding of each button's function.
- Before operation, verify that the laser, gas supply, cooling system, and other auxiliary equipment are functioning properly.
- Wear anti-static coveralls, heat-resistant gloves, and laser protective laser safety goggles in the laser operation area.
- Never allow body parts or clothing to contact with the laser beam path. Never look directly into the laser source.
- After powering on, manually run the X/Y axis at low speed to check for abnormalities (e.g., unusual noise or resistance).
- Keep flammable materials away from the laser work area. Confirm that the material being processed is non-toxic and non-flammable. Never cut materials unsuitable for laser processing (e.g., PVC, chlorine-containing plastics) to prevent toxic gas release.
- Avoid compressing gas lines during transport/use to prevent leaks or explosions. Store cylinders away from direct sunlight or heat sources.
- If abnormalities occur (e.g., smoke, unusual sounds, program errors), press the emergency stop button immediately.
- Perform regular maintenance, including rail cleaning and gas line leak checks.

- Never override software power/speed limits to prevent equipment overload.
- In case of beam misalignment, lens contamination, or abnormal energy output, halt operation and press the emergency stop button immediately.
- Avoid directing the laser beam onto highly reflective materials. If unavoidable, adjust the material angle to prevent harmful reflections.
- Deactivate the laser when the equipment is not in use.

# Chapter 1 Quick Start

## 1.1 Acquire and Install

The HypCutRevo software comes pre-installed on the HyPanel2 EtherCAT CNC Host and is ready for immediate use upon startup. For software recovery or upgrades, you can contact equipment manufacturers and technical support for installation packages. Additionally, you can download the latest version from BOCHU official website.

After HyPanel2 is powered on, double-click the HypCutRevo shortcut on your desktop to launch the software.


Figure 1-1 Launch HypCutRevo

If system abnormality occurs, press the ***Restore*** button on the HyPanel2 to reset to the factory settings

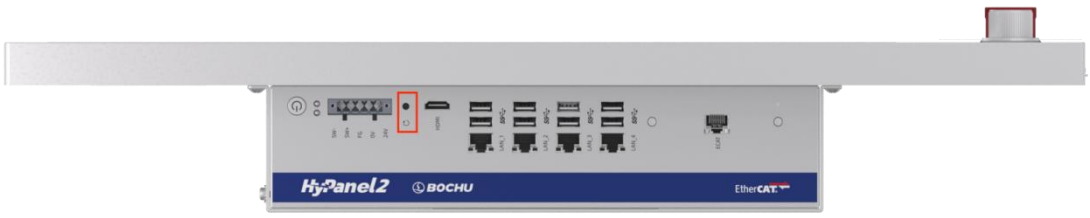


Figure 1-2 Perform a system restore

## 1.2 User Interface

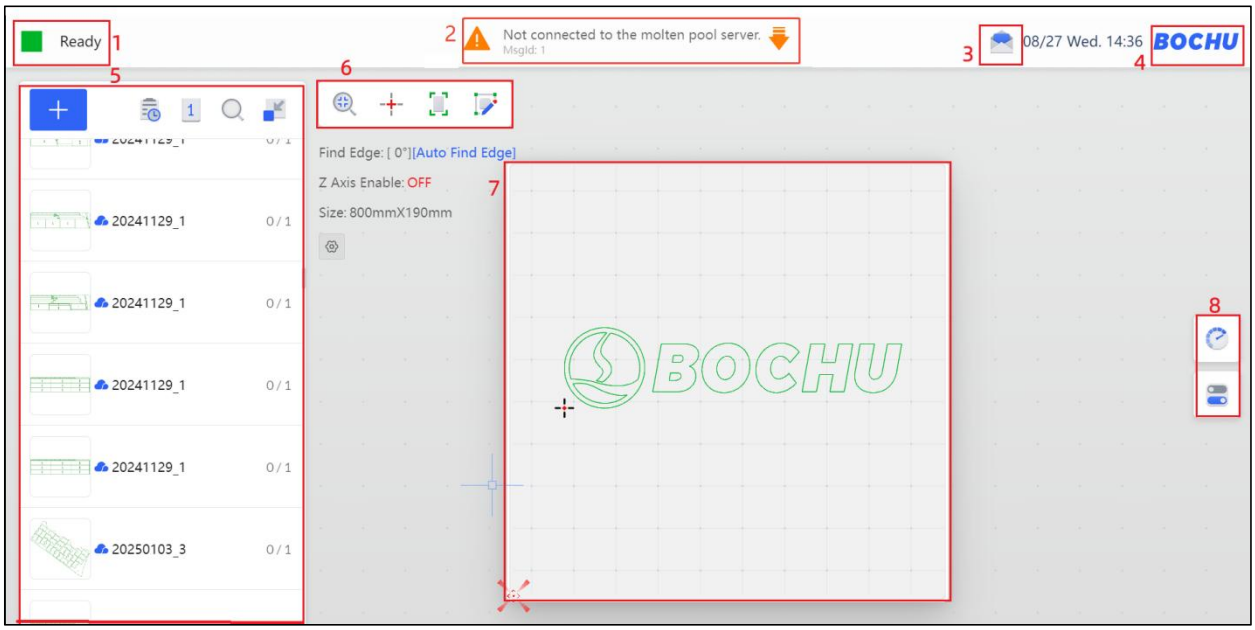


Figure 1-3 User interface

1. Machining Status
2. Alarm Center
3. Message Center
4. User Menu
5. Task List
6. Quick Toolbar
7. Drawing Display Area
8. Control Center
9. Bottom Function Bar

**Table 1-1 User Interface Description**

| No. | Name | Description |
|---|---|---|
| 1 | Machining Status | Displays real-time machine status: ***Ready***, ***Start***, and ***Pause***. |
| 2 | Alarm Center | Shows active alarms/warnings during machining. Click each entry to view detailed causes and recommended solutions. Historical alarm records are also accessible. |
| 3 | Message Center | Shows task progress and software logs. |
| 4 | User Menu | Contains user-related settings and configurations, including account switching, production/debug mode switching, ***About*** interface, ***System Settings***, ***System Backup***, ***Save Troubleshoot File***, and ***Translation Settings***. |
| 5 | Task List | Provides centralized management of all machining tasks imported from |

| No. | Name | Description |
|---|---|---|
| | | local storage or network sources. Supports search, filter, sort, and deletion. For details, refer to Task Management. |
| 6 | Quick Toolbar | • Fit Window: Auto-adjusts zoom/position for full drawing display.<br>• Zero Reference: Sets the zero reference position of the cutting head relative to the graphics to be machined.<br>• Preview: Shows the position of the graphics to be machined in relation to the machine tool.<br>• Graphic: Allows manually editing of imported graphics or modification of graphic techniques. |
| 7 | Drawing Display Area | Shows the imported drawings. Direct editing is not available in the main interface. The left panel provides information such as edge-finding results, ***Z-Axis Enable*** status, drawing size, and pallet status. The white frame indicates the machine's working envelope, while the black frame represents the workpiece edge. |
| 8 | Control Center | Provides data monitoring and commonly used functions during production and debugging. For details, refer to Control Center. |
| 9 | Bottom Function Bar | Configures the machining technique parameters for the tasks. Additionally, the ***Toolbox*** contains functions for ***Pre-Production Preparation***, ***Production Assistant***, ***Technique Debug***, and machine diagnostics. Frequently used tools can be pinned to the bottom bar for quick access. |

## 1.3 Production Workflow

The primary workflow of HypCutRevo includes: Import Tasks, Preprocess Graphics, Set Machining Techniques, Perform Pre-Production Checks, and Start Production.

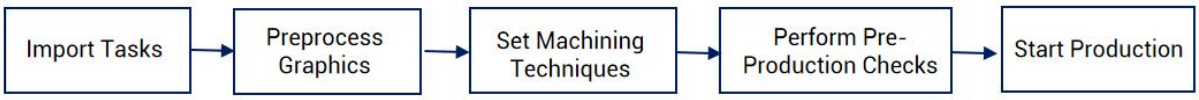


Figure 1-4 HypCutRevo production workflow

### 1.3.1 Import Tasks

Production tasks can be imported via the following four methods: local import, cloud import, graphic drawing, and QR code import. All imported tasks are automatically added to the Task List for unified management.

- Local import: Click the ***Add*** button on top of the Task List to open the file explorer. Select locally saved cutting files. Supported formats include: *.dxf, *.lxd, *.lxds, *.nrp, *.nrp2, and *.nc. The *.nrp2 multi-task packages are automatically split into individual jobs. Operations such as search, multi-select, and preview allow for quick file selection.

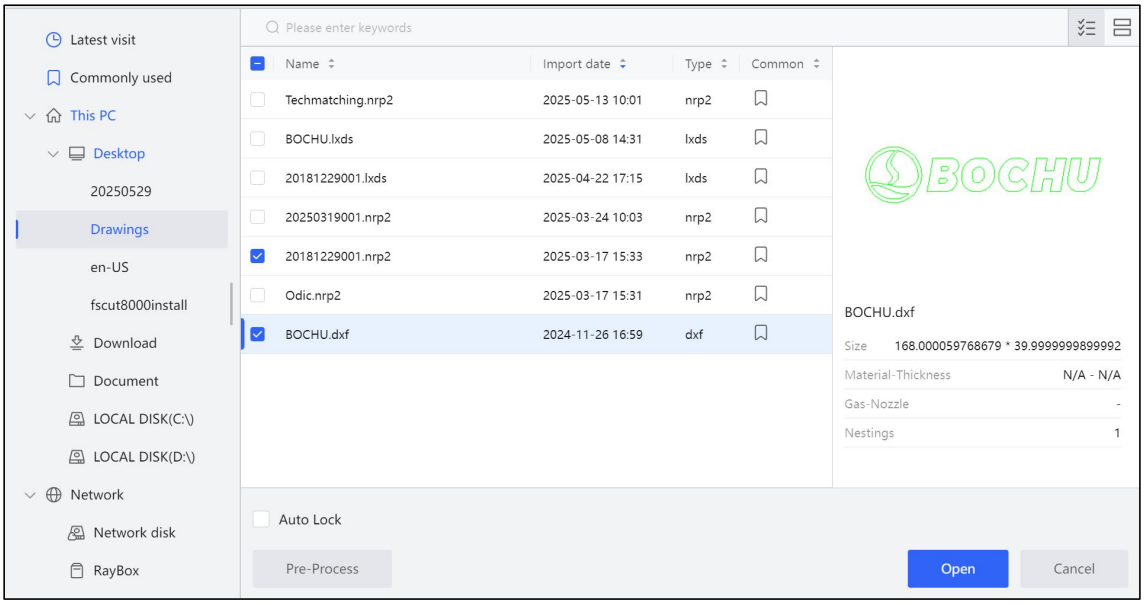


Figure 1-5 Import local drawings

- Cloud import: Push nesting results from CypNest to HypCutRevo (requires machine binding).

- Graphic drawing: On the ***Graphic*** page, click ***Draw*** to create standard shapes or parts. To improve accuracy and efficiency, it is recommended to configure ***Attach Settings*** and ***Object Capture*** via ***System Settings*** → ***CAD Settings***. For detailed drawing operations, see Graphic Drawing.

- QR code import: Scan the nesting result using a code scanner.

If ***Auto Lock*** is enabled during local import, imported tasks will be locked in the Task List to prevent immediate production. If the imported task lacks machining technique parameters, a prompt will appear. Configure technique parameters first before starting production.

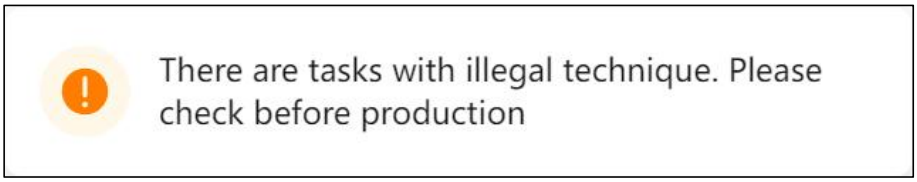


Figure 1-6 Missing machining technique prompt

## 1.3.2 Pre-process Graphics

When cutting files are imported locally, the software optimizes drawings through ***Auto remove trivial graphics***, ***Delete Duplicates***, ***Join Nearest Lines***, ***Auto Smooth***, ***Auto Sort***, among others. In most cases, no further action is needed before proceeding to set machining technique parameters.

If automatic optimization fails to meet production requirements, navigate to ***User Menu*** → ***System Settings*** → ***User Preference*** → ***Drawing Processing***, and modify optimization parameters. Changes will apply to all subsequently imported drawings.


Figure 1-7 Modify auto-optimization parameters

Additionally, imported drawings can be manually adjusted using ***Graphic*** in the Quick Toolbar menu. The ***Graphic*** page supports size modification, geometric transformations, graphic technique modification, graphic markup display, among others. For details, refer to Graphic Operations and Graphic Techniques and Tools.

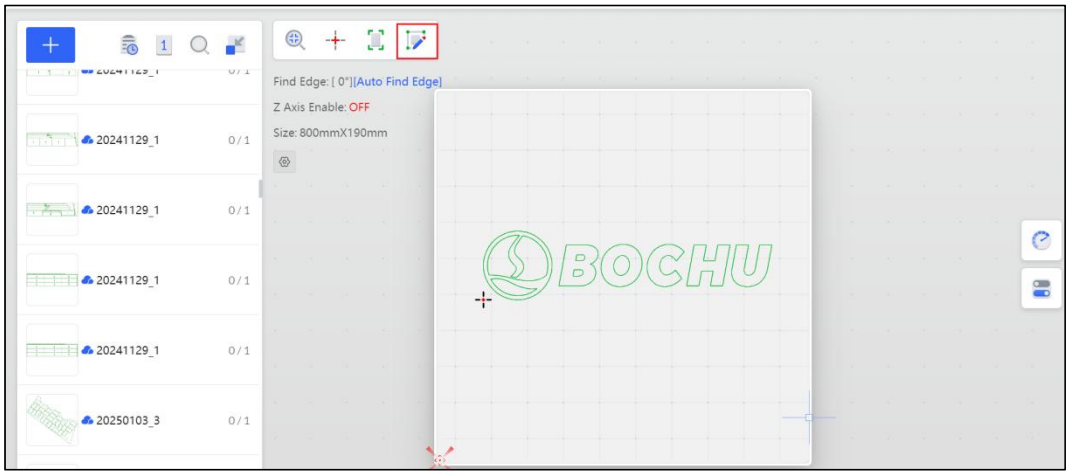


Figure 1-8 Graphic entrance

## 1.3.3 Set Machining Technique

After confirming that the drawing meets production requirements, click ***Technique*** in the Bottom Function Bar to set cutting, piercing and other parameters. For details, refer to Machining Technique Settings.

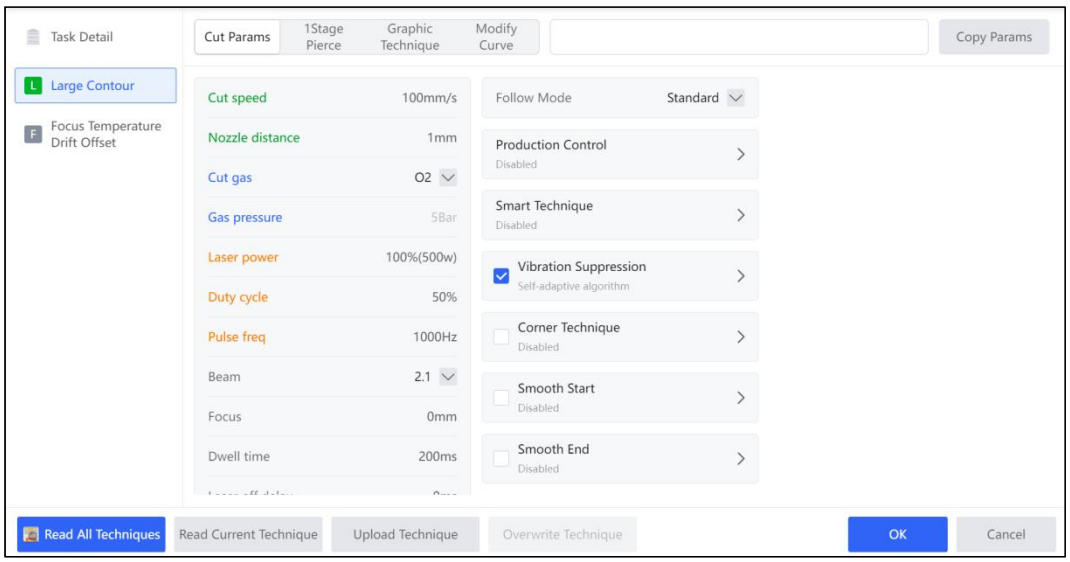


Figure 1-9 Technique interface

### 1.3.4 Perform Pre-Production Checks

Before starting production, complete the following checks and preparations:

- Verify the alignment of the drawing with the actual machine's working area. Click ***Preview*** in the Quick Toolbar. After previewing, the software automatically moves ***Zero Reference*** to the current position of the cutting head, and shifts the drawing accordingly.
  - If the cutting head position in the software differs from that in the physical machine tool, perform ***Return Origin*** to correct it.
  - If any part (or the entirety) of the graphic lies outside the machine's working area, machining may exceed the machine's travel limits.

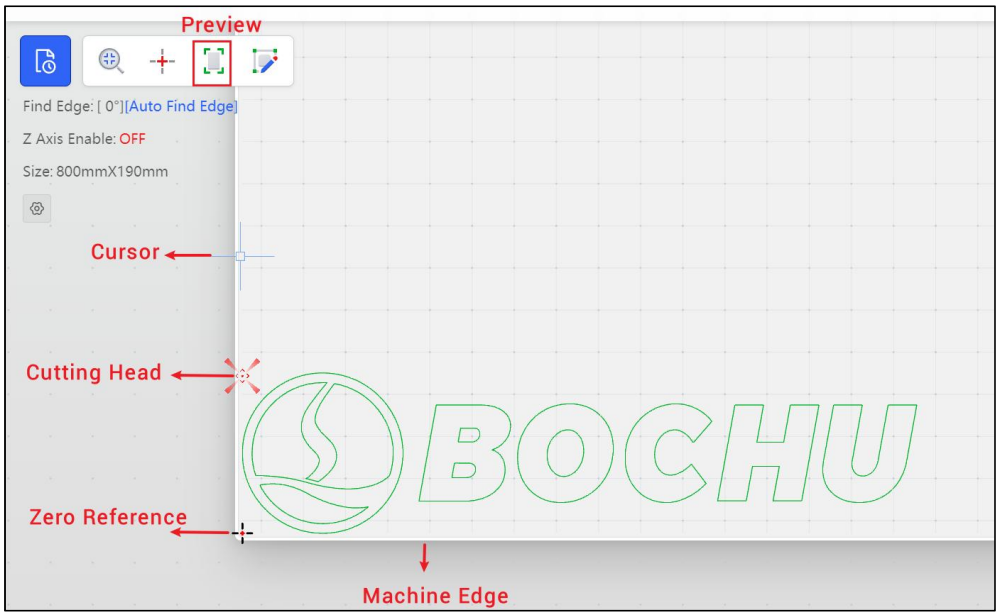


Figure 1-10 Coordinate markers

- Confirm ***Zero Reference*** setting. Click ***Zero Reference*** in the Quick Toolbar. Different buttons can be clicked to adjust the relative position of the drawing to the preset ***Zero Reference***. For example, if the cutting head is located in the lower-left corner of the graphics to be processed, set ***Zero Reference*** to the lower left.

- Simulate the production (recommended). Open ***Console*** in the Control Center and click ***Simulate*** to check the full machining toolpath. Simulation only visualizes the toolpath in the software, and no machine movement is involved.
  - Yellow: Completed toolpath.
  - Green: Toolpath to be machined.

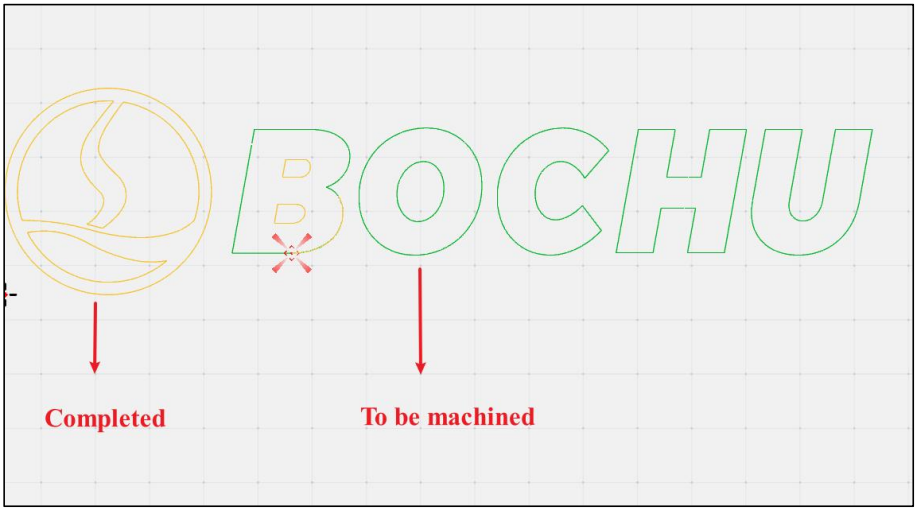


Figure 1-11 Perform simulation

- Verify machining information Check drawings, technique parameters, origin settings, and auxiliary configurations. Use ***Frame*** to verify that all drawings are within the plate's boundaries.
- Check machine status. Confirm there are no alarms or faults, ensuring the machine is ready for machining.

### 1.3.5 Start Production

Once all checks are complete, press the ***Start*** button on the WKB Wireless Remoter or HyPanel2 to begin production. During operation, most interface functions are disabled, with only specific pages (e.g., ***Technique***, ***IO Monitor***, ***Axis Monitor***) remaining accessible.

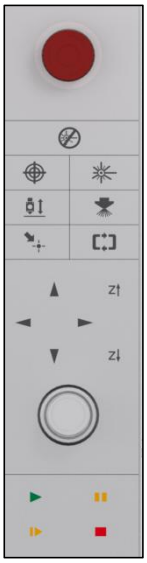

Figure 1-12 HyPanel2 control buttons

The following table describes HyPanel2 control buttons.

**Table 1-2 HyPanel2 Control Buttons Description**

| Icon | Name | Description |
|---|---|---|
| | Emergency Stop | Immediately halts all machine motion in case of emergency. |
| | Shutter | Controls the laser shutter's on/off state. |
| | Aiming | Controls the laser aiming's on/off state (mutually exclusive with ***Shutter***). |
| | Laser | When idle, press to enable laser burst. During machining, it shows the laser output status. |
| | Follow | Activates the ***Follow*** mode, positioning the cutting head to the plate surface. Ensure the plate is present below the cutting head. |
| | Gas | Controls the cutting head's gas blow on/off state when idle. During machining, it reflects the gas status. |

| Icon | Name | Description |
|---|---|---|
|  | Return Zero | Moves the cutting head to the set zero point position. |
|  | Frame | Typically used with ***Aiming***. Moves the machine tool along the outermost contour of the cutting graphic to verify size and position. Z-axis remains stationary when performing ***Frame***. |
|  | Jog Control | Jogs the cutting head along X/Y/Z axes. Jog speed is adjustable in ***System Settings*** → ***Motion Control Parameter***. |
|  | Speed Knob | Adjusts cutting/simulation speed, with a range of 0% to 120%. |
|  | Start | Initiates the machining process. The machine starts operating according to the programmed path. |
|  | Pause | Temporarily pauses machining. During pauses, manual control of the cutting head/gas is allowed. Additionally, you can navigate to ***Control Center*** → ***Console***, and use ***Backward/ Forward*** to retrace toolpaths. |
|  | Resume | Continues the paused jobs. If no graphic shapes/techniques are changed, clicking ***Breakpoint*** can move the cutting head to the last stopped position and restart cutting. |
|  | Stop | Terminates the machining process. The cutting head returns to the preset position. |

# Chapter 2 Graphic Operations

HypCutRevo is a laser cutting control software that includes only basic graphic editing functions. For optimal results, it is recommended to use CypNest for graphic processing and nesting.

## 2.1 Graphic Selection

Select target graphics on the drawing board by clicking or dragging a selection box. This allows subsequent operations such as copy, rotate, move, scale, and delete. In the Drawing Editing Tools of the ***Graphic*** page, you can also use more options in the ***Select*** drop-down menu for quick targeting.

- Click selection: Tap/Click directly on a graphic contour to select it.
- Box selection: Press and hold, then drag to create a selection box. Box selection has two rules.
  - Left-to-Right drag: Selects only graphics completely enclosed in the selection box. For example, only the letters O, C, and H are selected in the figure below.

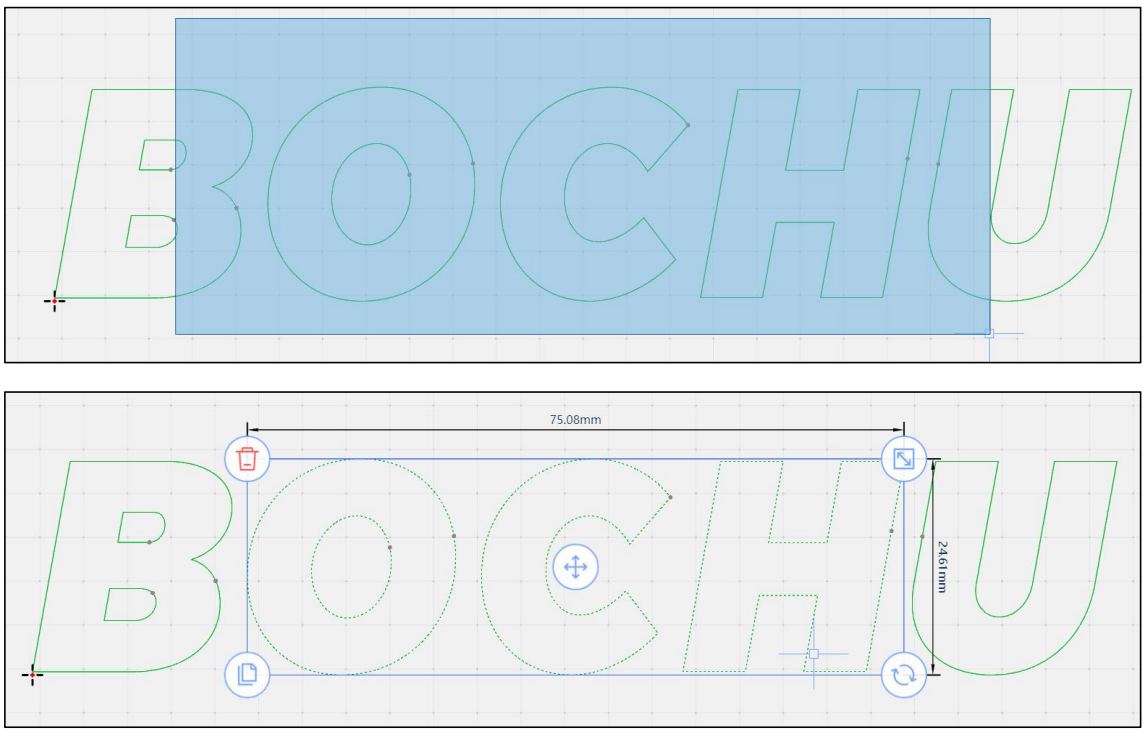


Figure 2-1 Left-to-Right drag

- Right-to-Left drag: Selects any graphic that partially intersects with the selection box. For example, all letters (B, O, C, H, U) are selected.

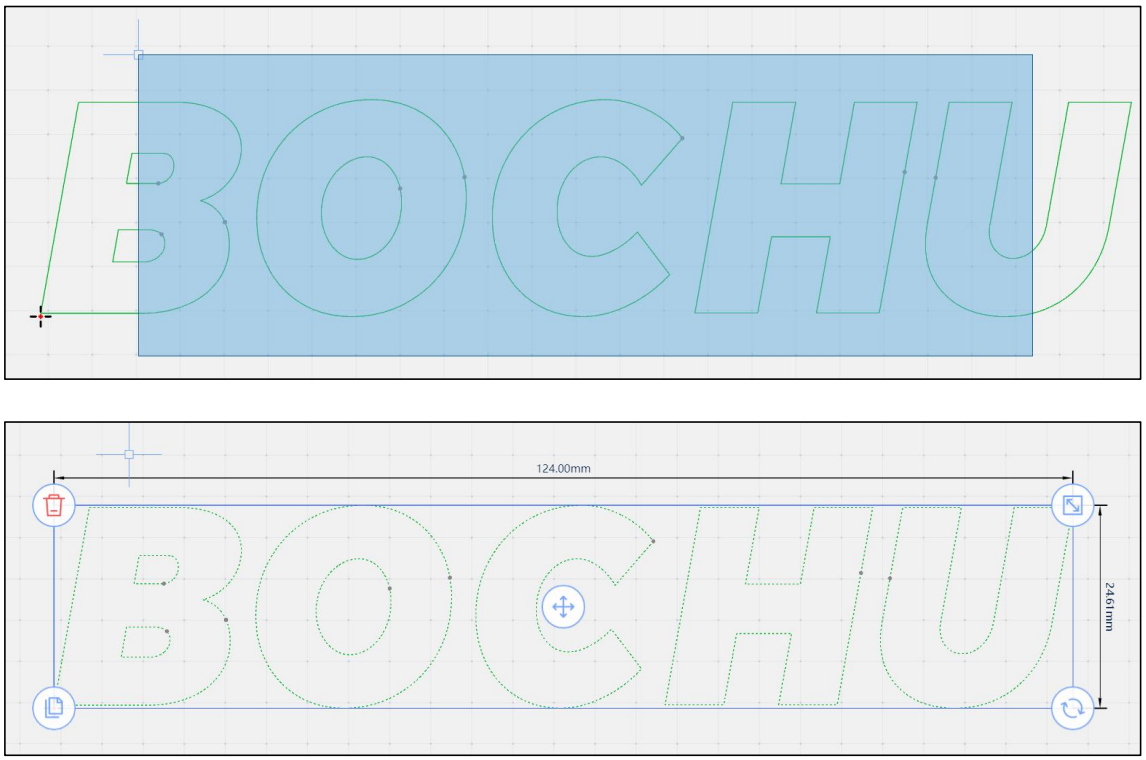


Figure 2-2 Right-to-Left drag

## 2.2 Graphic Drawing

***Draw*** is accessible on the ***Graphic*** page top menu bar, including three types: ***Standard Parts***, standard shapes, and ***Text***.


Figure 2-3 Graphic drawing

### 2.2.1 Standard Parts

The ***Draw Parts of Standard Shape*** page offers approximately 40 predefined part templates. Select a specific part type and set its parameters. A preview window on the right displays the design in real time for quick verification.

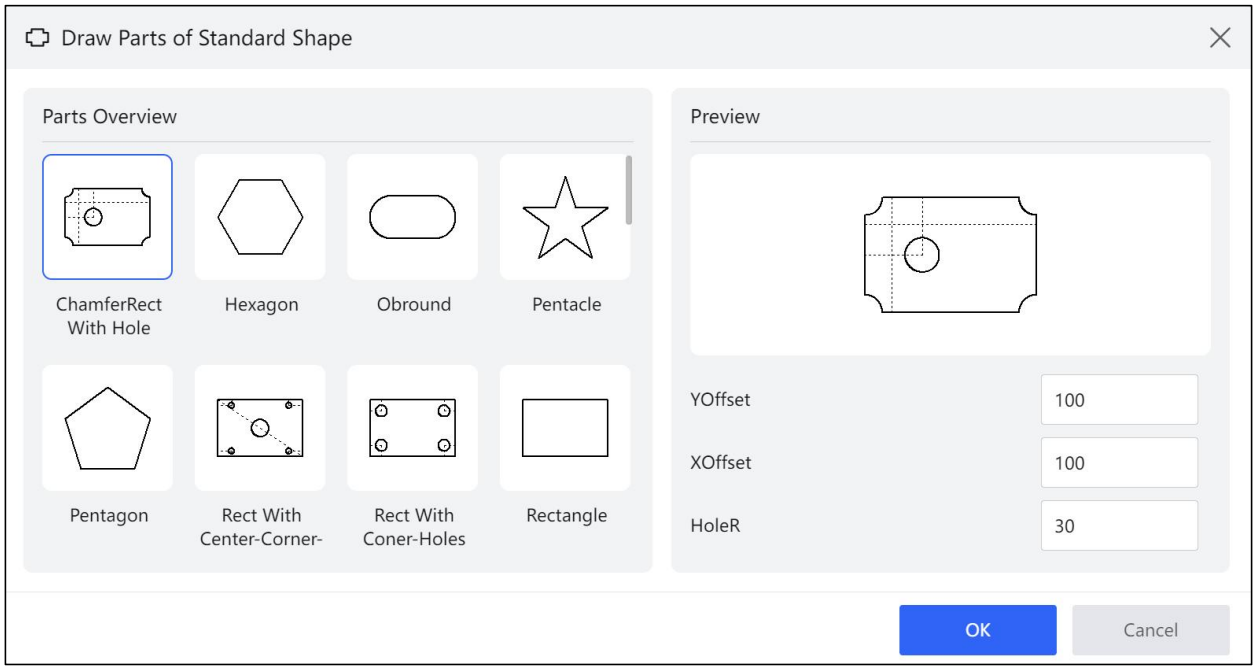


Figure 2-4 Draw parts of standard shape

### 2.2.2 Standard Shapes

Eight types of standard shapes are available, in order from top to bottom: point, line, polyline, circle, arc, ellipse, rectangle, rectangle, and polygon. ***Arc*** includes ***3-Point Arc*** and ***Scan Arc***. During drawing, dimensions/coordinates are displayed dynamically, eliminating the need for post-drawing dimension adjustments.

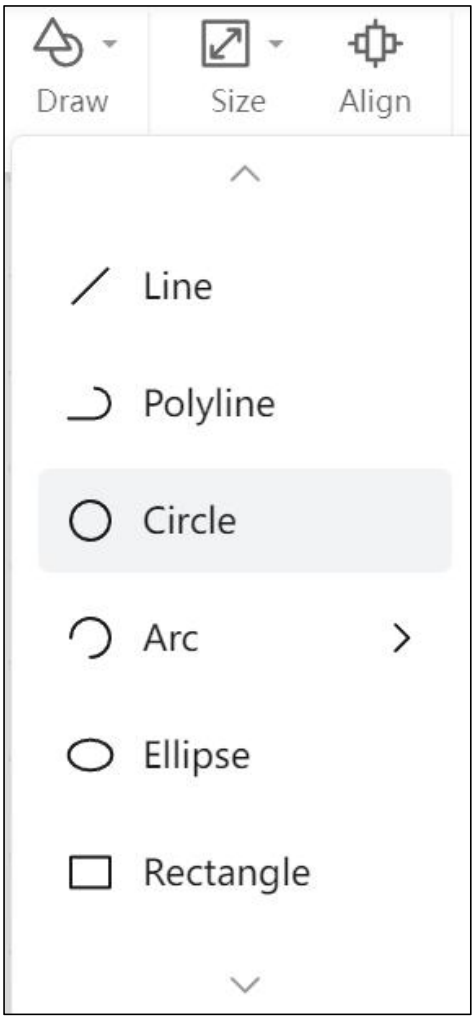


Figure 2-5 Standard shapes

### 2.2.3 Text

HypCutRevo supports text input and text-to-curve conversion. Click ***Text***, then click on the drawing area to open the ***Edit Text*** screen. Enter the desired text and configure parameters such as ***Font*** and ***Height***. To modify the text later, double-click the inserted text to reopen the editing page.

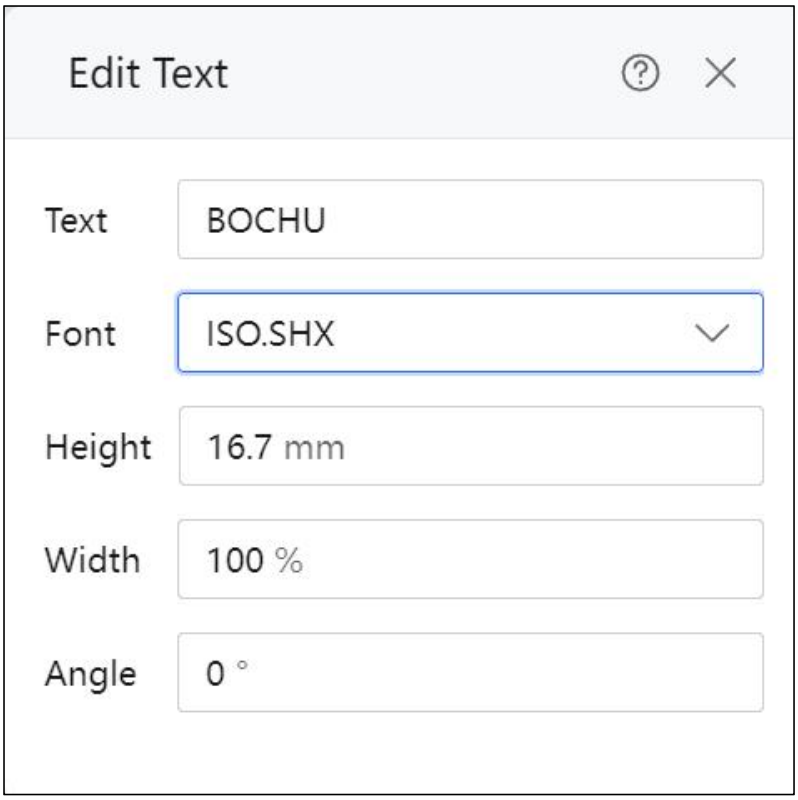


Figure 2-6 Text editing

⚠Notice: Once text is converted to curves, it can no longer be edited as text via the ***Edit Text*** page. If a specific font or style is required, ensure that the text content, font, and styling are finalized before applying the conversion.

## 2.3 Size and Align

Used to adjust the dimensions and orientation of graphics. Select target graphics before use.

### 2.3.1 Size

The software supports resizing by fixed values and scaling factors, allowing quick dimension adjustments. After selecting the target graphic, click the corresponding option in the ***Size*** drop-down menu. For example, ***100 mm*** means scaling the graphic proportionally to 100 mm width; ***2 X*** means scaling the graphic proportionally by 2 times.

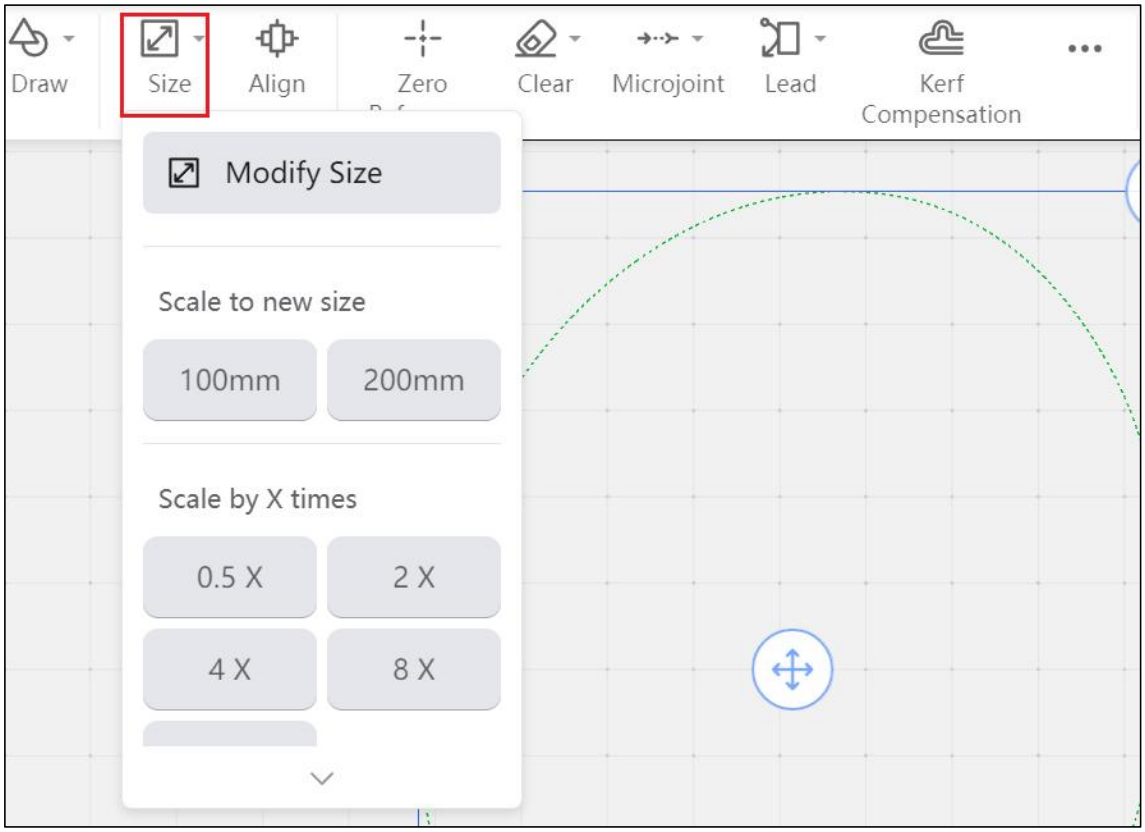


Figure 2-7 Graphic size adjustment

For precise dimensions, click ***Size*** → ***Modify Size*** and enter the required values in the pop-up window. When the lock icon between length and width is locked, it maintains the original aspect ratio. To input length and width separately, first unlock by clicking the lock icon, then enter new dimensions.

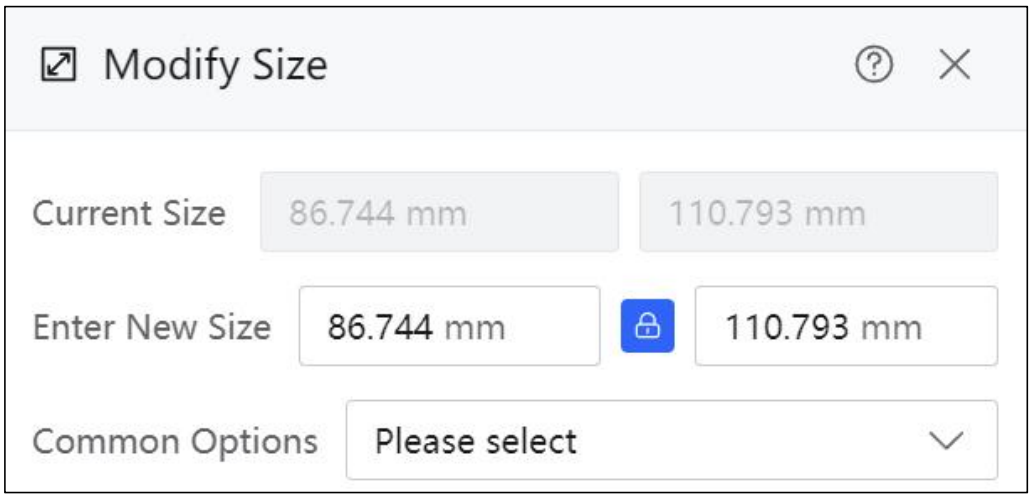


Figure 2-8 Enter new size

The ***Scale Center*** allows specifying the positional relationship between the scaled graphic and the original graphic. For example, ***Top Left*** means the new graphic will align with the original at the top-left corner, with scaling based on this reference point.

If ***Exclude graphic technique*** is checked, resizing applies only to the base graphic without adjusting the size of any added graphic techniques (lead, compensation, or others).

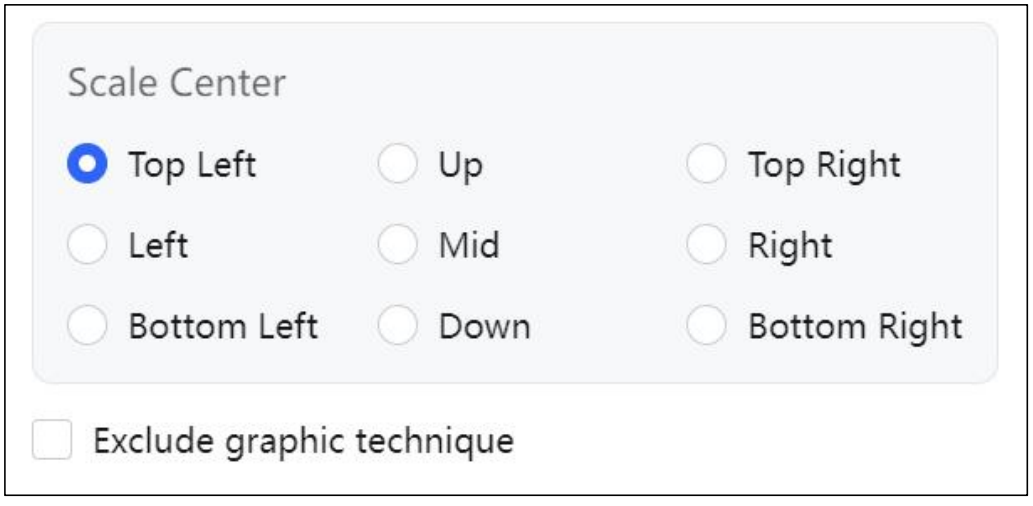


Figure 2-9 Scale center

⚠Notice: Dimensions of the added graphic techniques (e.g., lead, compensation) will remain unchanged and will not be resized with the graphic.

### 2.3.2 Align

After selecting the target graphic, choose specific transformation methods from the ***Align*** drop-down menu, including ***Align***, ***Mirror.***, and ***Rotate***

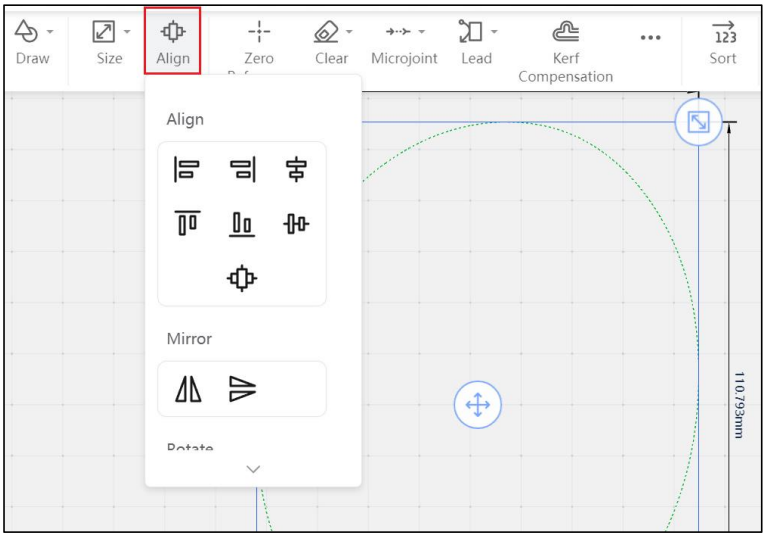


Figure 2-10 Align

### 2.3.3 Quick Translate and Copy

HypCutRevo supports quick translation and copy using keyboard arrow keys. Before use, enable ***Fine Tune*** in the left toolbar under ***More Options***, and set the distance.

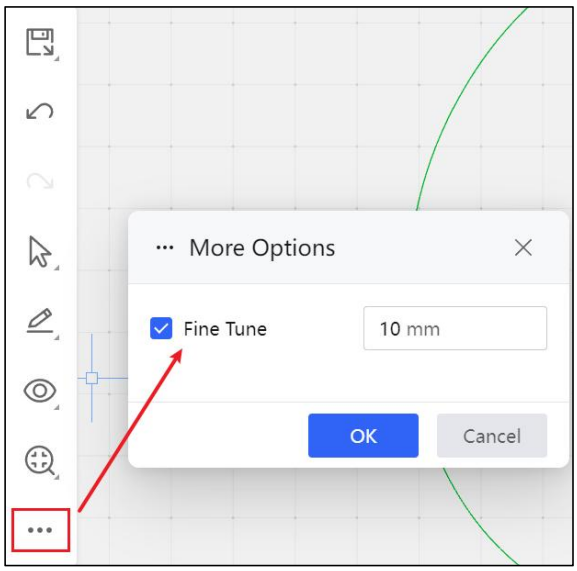


Figure 2-11 Enable fine tune

- Quick translate: Select the target graphic and press an arrow key to move it in the corresponding direction by the defined distance. This is useful when temporarily shifting a

graphic aside to focus on editing others, and then moving it back precisely. Since the fine-tuning distance is numerically defined, the original positioning remains accurate.

- Quick copy: Hold ***Ctrl*** and press an arrow key to copy the selected graphic in the specified direction. For example, pressing ***Ctrl*** + ↑ creates a copy 200 mm above the original graphic.

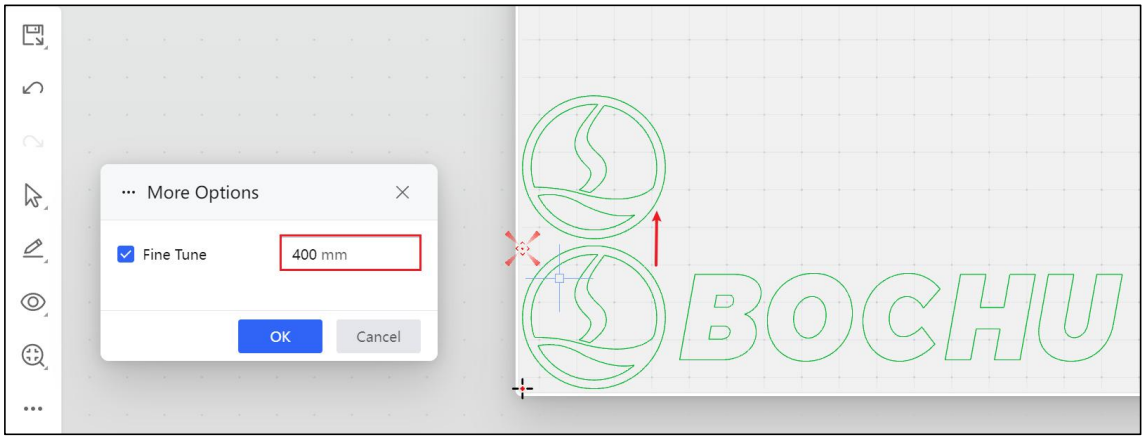


Figure 2-12 Quick translate and copy

## 2.4 Drawing Editing Tools

The left sidebar provides multiple tools to assist with graphic editing and optimization.

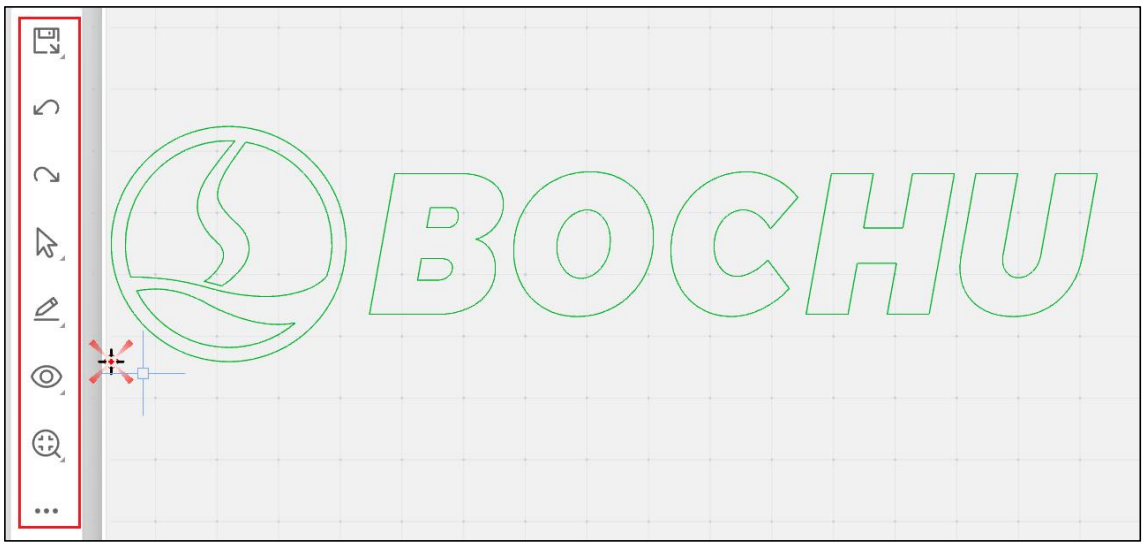


Figure 2-13 Editing toolbar

The toolbar mainly includes functions for selection, display, editing, and view adjustment.

**Table 2-1 Graphic Editing Tools Description**

| Icon | Name | Description |
|---|---|---|
|  | Save as | Saves modified graphics as *.lxd or *.dxf files locally for later use. |
|  | Undo | Cancels the last operation, restoring the previous state. |
|  | Redo | Reapplies the undone operation, returning to the state before undo. |
|  | Select | Quickly targets graphics with options for: ***Select All***, ***Invert Selection***, ***Deselect***, ***Select All*** (a certain graphic type), ***Select Similar Graphics***, and ***Select Similar Graphics (angle sensitive)***. |
|  | Editing Options | Common editing options include ***Cut***, ***Copy***, ***Copy with Basepoint***, ***Paste***, and ***Delete***. |
|  | Display | Customizes drawing area markers, including ***Display Part Number***, ***Display Contour Number***, ***Display Cutting Path***, ***Display Open Contour Frame***, ***Display Travel Path***, among others. |
|  | Zoom or Fit Window | Toggles the view range of the drawing area: ***View All***, ***Machine Range***, and ***Adapt Selection***. |
|  | More Options | Enables or disables ***Fine Tune***. When enabled, graphics can be moved precisely according to the predefined step distance. |

# Chapter 3 Graphic Techniques and Tools

The top menu bar on the ***Graphic*** page contains commonly used functions including graphic techniques, ***Sort***, ***Group***, and ***Set Layer***.

When no graphic is selected, any added graphic techniques will apply to all graphics in the drawing area. When specific graphics are selected, the operations will only affect those selected ones.


Figure 3-1 Graphic techniques and tools

## 3.1 Microjoint

Adds small uncut segments to the toolpaths to prevent part warping or fall-off after cutting. When machining reaches a microjoint, the laser shuts off automatically. Whether the assist gas and height following are disabled depends on the parameters configured for short travel. On the screen, microjoints are displayed as gaps on the contour.

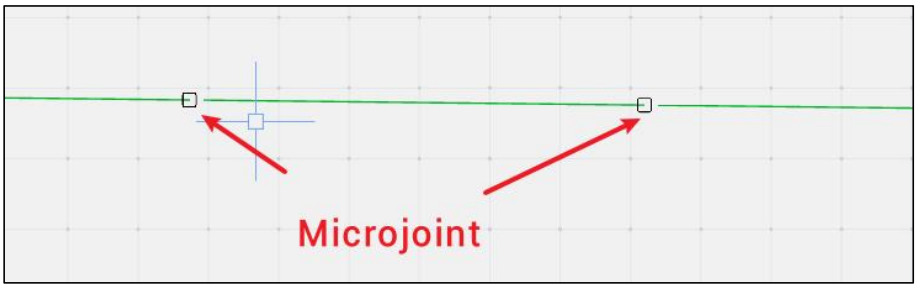


Figure 3-2 Microjoint

Two insertion methods are supported:

- Manual Microjoint: Click ***Manual Microjoint***, specify the desired size and application options, then click the target position on the graphic contour to insert a microjoint. Multiple microjoints can be added by consecutive clicking. Press ***Esc*** or right-click to exit the insertion mode.

➢ Auto Microjoint: Click ***Auto Microjoint*** and configure parameters.

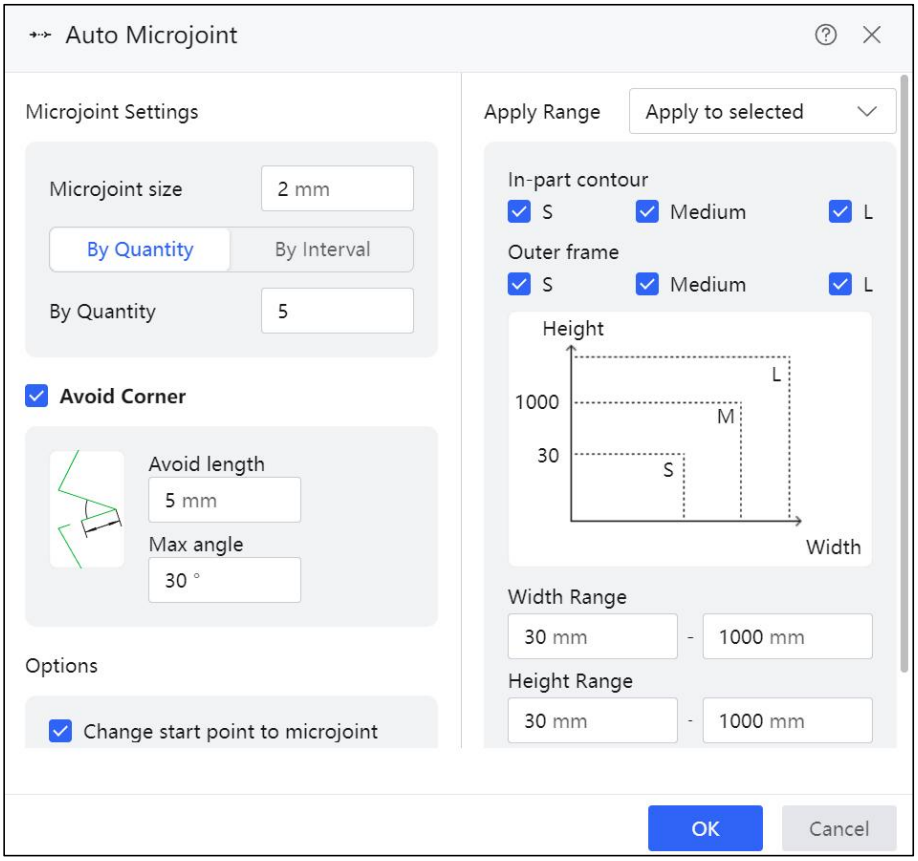


Figure 3-3 Auto microjoint

In the machining technique settings, if the ***No pierce*** is enabled and ***Fly cut at Microjoint*** is checked on the ***System Settings*** → ***Production*** → ***Technique Settings*** page, the microjoints will be cut using fly cut mode. In this mode, the laser turns off when the cutting head travels over the microjoint starting point and activates when the cutting head reaches the microjoint endpoint. Along this journey, acceleration/deceleration motion is not involved, and the Z-axis does not lift, significantly improving the microjoint cutting efficiency.

## 3.2 Lead

Cutting directly starting from the parts first may damage their integrity. To ensure good quality, it is necessary to introduce the cutting in waste areas. Select the target graphic, click ***Lead***, and configure the parameters in the function page.

### 3.2.1 Auto Lead

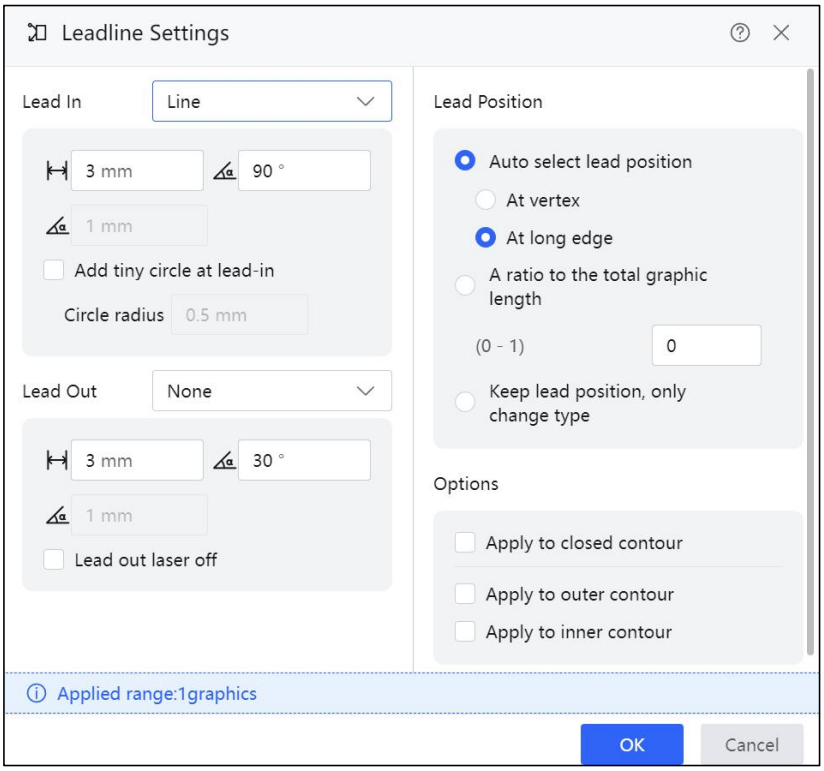


Figure 3-4 Leadline settings

- Lead type: Options include ***None***, ***Line***, ***Arc***, and ***LineArc***. For ***LineArc***, specify the arc radius.
- Length: Defines the distance from the lead start to the part contour. Proper length can prevent thermal effects and piercing debris from reducing the cutting quality of the part edge.
- Angle: Defines the angle of the lead relative to the cutting part contour. Proper angles can optimize the toolpaths and reduce heat concentration in critical locations (especially in corners or narrow areas). This function helps protect the integrity of part edges.
- Add tiny circle at lead-in: Small circles at the leadin start help discharge the piercing-generated slag/debris, preventing excessive accumulation that decreases initial

cutting-edge quality.

⚠Notice: Determine the lead type based on the actual cutting conditions (***Line*** is typically used). When cutting thick plates, line-type leads may pose thermal damage risks. Therefore, ***Arc*** or ***LineArc*** is recommended to mitigate heat accumulation.

- Lead out laser off: Prevents the parts drop-off and laser overburn when the cutting comes to an end.
- Lead Position:
  - Auto select lead position - At vertex: When enabled, lead-in will be inserted at part vertices.
  - Auto select lead position - At long edge: When enabled, prioritizes the lead-in position along the longer part edge.
  - A ratio to the total graphic length: Enter a value between 0 and 1 to introduce the lead at the corresponding position along the contour (e.g., 0.5 = midpoint).
  - Keep lead position, only change type: Changes the lead type (such as ***Arc*** or ***Line***) without altering its position.

### 3.2.2 Identify Inner/Outer Contour

When opening external files (e.g., *.dxf), the software automatically identifies outer and inner contours. If the contour structure changes during graphic editing, the inner/outer relationships may be disrupted and must be re-identified. Use ***Identify Inner/Outer Contour*** from the ***Lead*** drop-down menu to update.

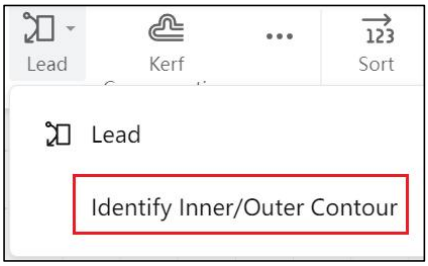


Figure 3-5 Identify inner/outer contour

The software identifies contours by enclosure: the outermost is the outer contour, the next level inside is an inner contour, and so on. Open contours cannot be categorized as outer or

inner.

When outer contours are for ***Outer*** cuts, lead-in should be introduced from the outside of the graphic; when inner contours are for ***Inner*** cuts, lead-in should be introduced from the inside of the graphic. To switch between an outer and inner cut, first select the target contour, then click ***Outer*** or ***Inner***.

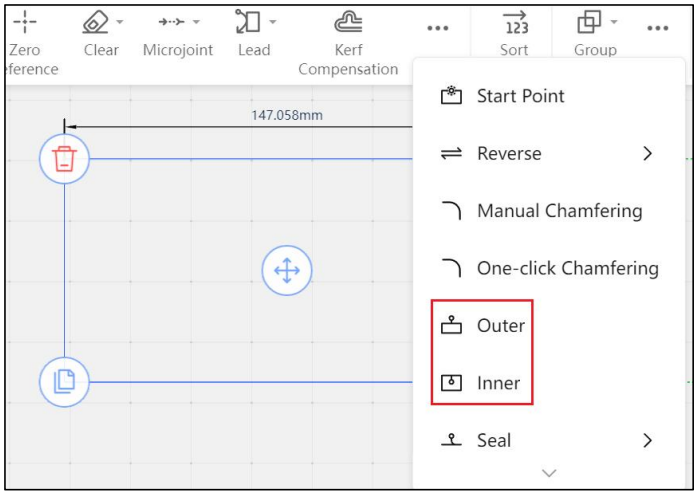


Figure 3-6 Outer and inner

## 3.3 Kerf Compensation

Applies dimensional deviations caused by kerf loss during cutting. Select the target graphic, click ***Kerf Compensation***, and set the parameters in the pop-up window. The compensated toolpath is displayed in green, and cutting will follow this adjusted path.

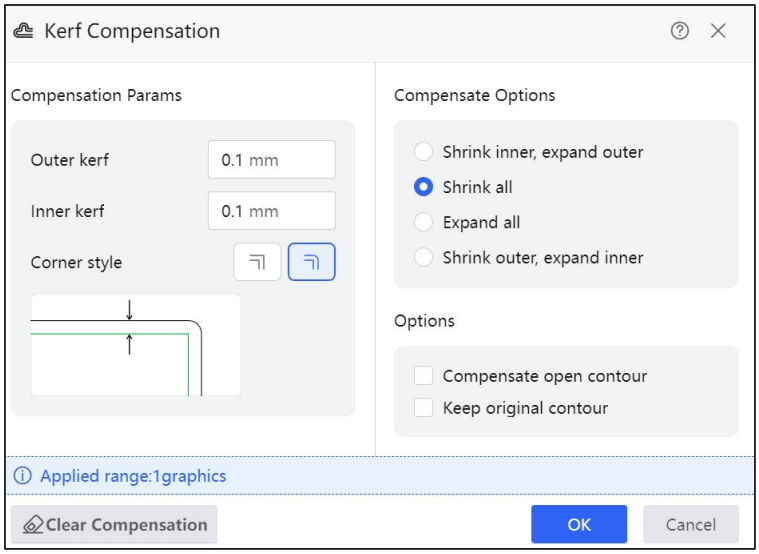


Figure 3-7 Kerf compensation

➢ Outer/Inner kerf: Set according to the actual kerf width. It is recommended to perform a

test cut and measure the kerf, then set the compensation value (compensation value = $\frac{1}{2}$ kerf width).

- Corner style: Choose either a sharp or round transition for corners.
- Compensate Options:
  - Shrink inner, expand outer: Shrinks inner closed contours (reducing hole size) and expands outer contours (increasing overall part size).
  - Shrink all: Applies inward shrink compensation to both inner and outer contours.
  - Expand all: Applies outward expansion to both inner and outer contours.
  - Shrink outer, expand inner: Shrinks outer contours (reducing part size) and expands inner contours (increasing hole size).
- Options:
  - Compensate open contour: Allows kerf compensation on open contours.
  - Keep original contour: Retains both the original contour and the compensated contour (both in green). If unchecked, only the compensated contour remains, and the original curve appears in black. The comparison is shown in the figure below.

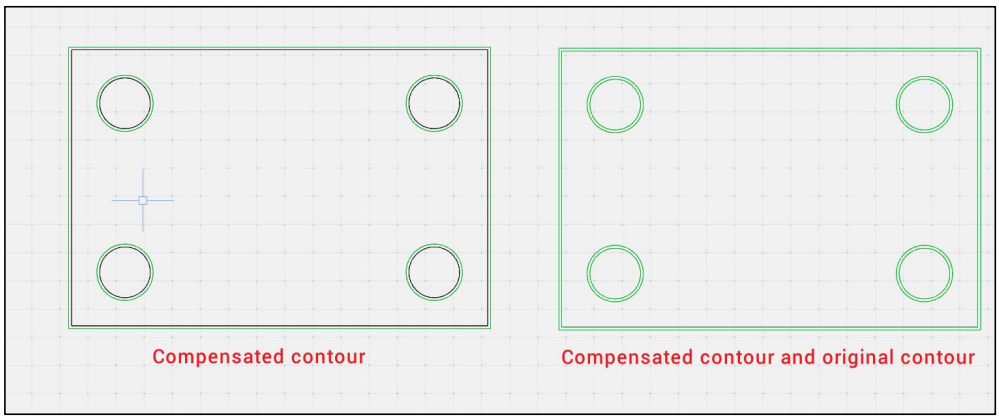


Figure 3-8 Compensated contour vs. Compensated contour with original contour remained

Notice: If the graphic requires co-edge cutting, compensation must be applied before performing ***Co-edge***.

## 3.4 Start Point

Used to modify the cutting start point of a graphic. After clicking ***Start Point***, then click on the desired point along the graphic to redefine the start. If needed, a lead-in can be drawn by clicking first outside the contour and then on the contour.

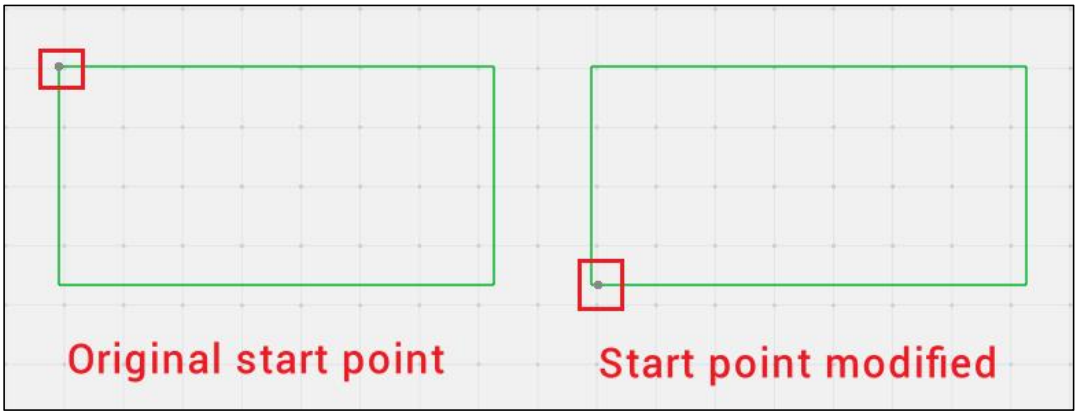


Figure 3-9 Modify start point

## 3.5 Manual/One-Click Chamfering

Commonly used for corner thermal management.

- One-click Chamfering: Select the graphic, click ***One-click Chamfering***, specify the type and length (or radius), and confirm to apply.
- Manual Chamfering: Click ***Manual Chamfering***, specify the type and length (or radius), move the cursor to the target corner, and click once the highlight box appears to add the chamfer.

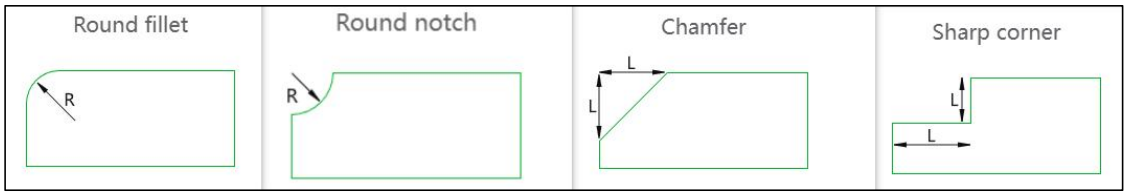


Figure 3-10 Chamfering type example

## 3.6 Seal/Gap/Over Cut

The ***Seal*** menu includes three functions: ***Seal***, ***Gap***, and ***Over Cut***.

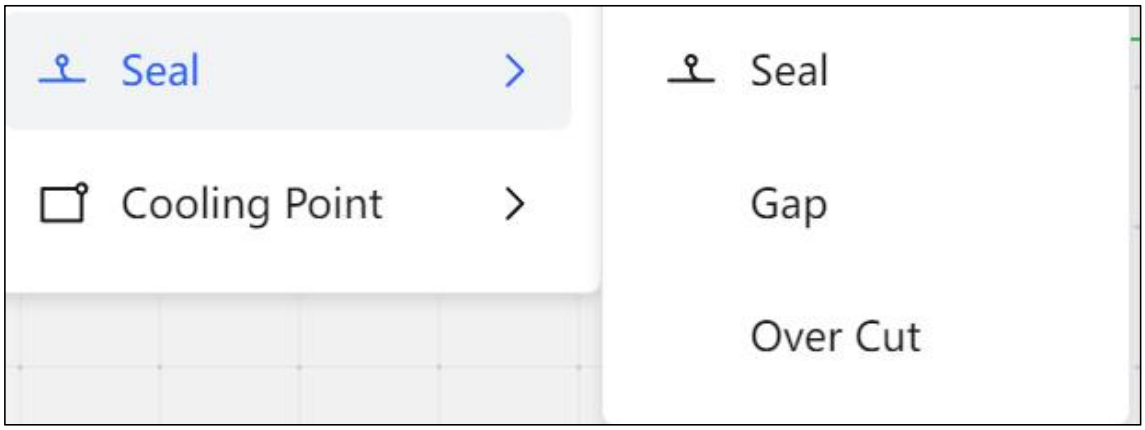


Figure 3-11 Seal menu

- Seal: Removes gaps or overcuts, restoring a closed contour.
- Gap: Leaves an uncut section at the end of the contour, preventing part warping or fall-off. After setting the gap size, click ***OK*** to apply.
- Over Cut: Adds an extended cutting segment to the toolpath end of the closed graphics, starting from the original start point and continuing along the contour. For single part cutting, enabling ***Over Cut*** allows the toolpath to continue slightly along the contour after the cut is complete, reducing the risk of incomplete separation at the start/end overlap.

## 3.7 Cooling Point

Primarily used for corner thermal management. During machining, when the cutting head reaches a cooling point, the laser shuts off, and cooling gas is triggered. This helps mitigate corner burning. The gas delay and gas blow can be set via ***System Settings*** → ***Gas***. After the delay, the laser activates to resume normal cutting.

To add a cooling point, click ***Cooling Point***, then click the desired position on the graphic. Similar to manual microjoint, multiple cooling points can be added by consecutive clicking. Cooling points can also be added after other graphic techniques (such as ***Microjoint*** or ***Kerf Compensation***) have been applied.

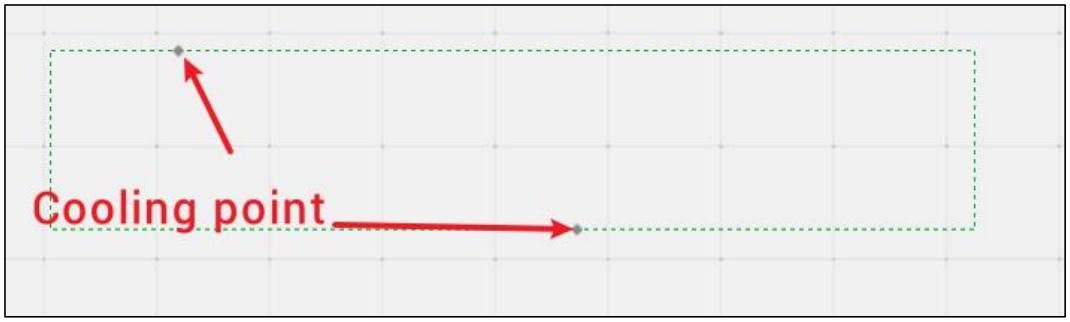


Figure 3-12 Cooling point

## 3.8 Sort

The ***Sort*** menu provides options for ***Smart Sort*** and interactive cutting order preview.

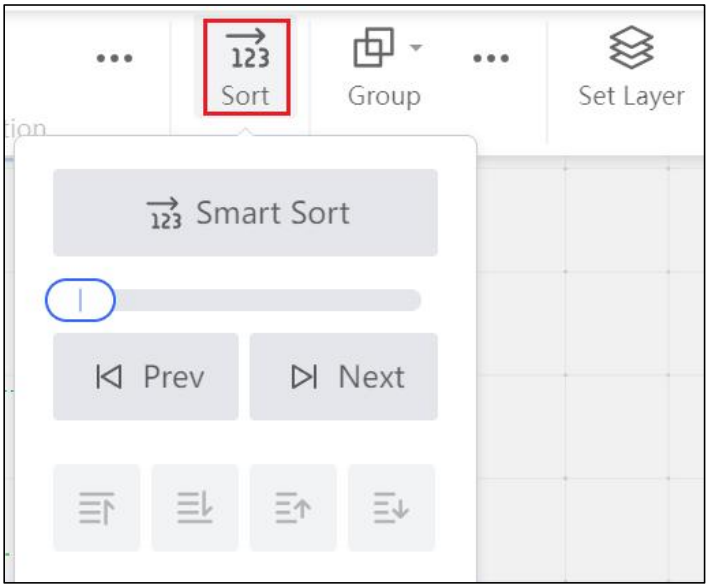


Figure 3-13 Sort

S*mart Sort* automatically generates the optimal cutting toolpath based on the configured parameters.

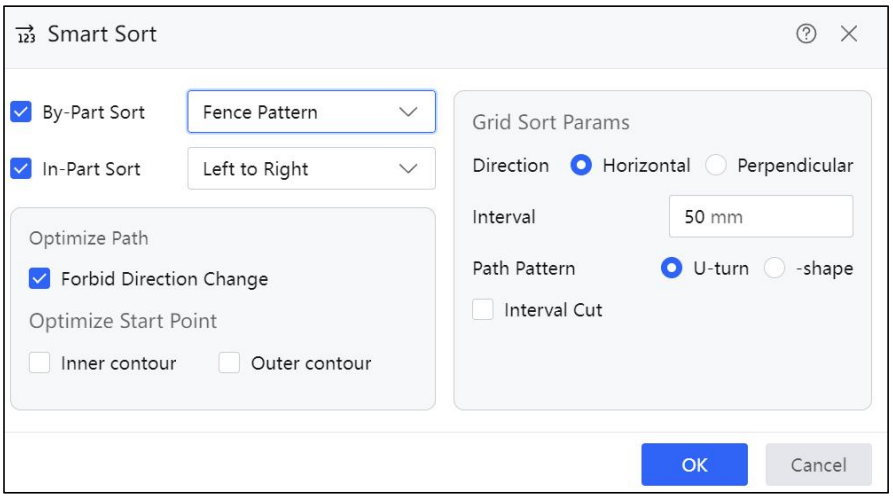


Figure 3-14 Smart sort

- By/In-Part Sort: Defines the order between parts, within individual parts, and among grouped co-edge parts. When enabled, a specific sorting method must be selected. If ***Fence Pattern*** is chosen, the ***Grid Sort Params*** must be configured on the right panel.
- Forbid Direction Change: By default, sorting will adjust both the cutting sequence and direction to shorten travel. When this option is checked, the original graphic direction remains unchanged.
- Grid Sort Params: The grid is automatically divided based on the defined ***Direction*** and ***Interval***. Within each grid, the cutting order is then generated to ensure the shortest travel path.
  - Path Pattern: Select ***U-turn*** or ***Z-shape***. ***U-turn*** produces an S-shaped cutting order, with adjacent regions starting in opposite directions. ***Z-shape*** produces a one-directional cutting order, with adjacent regions starting from the same position.
  - Interval Cut: Controls which regions are selected for cutting. When enabled, the divided regions are grouped into alternating intervals, which are cut according to the specified parameters.

## 3.9 Tools

### 3.9.1 Group

A group is a collection of multiple independent graphics (or nested subgroups). The relative position, cutting order, and layer attributes of graphics within a group are locked. Operations such as moving, rotating, and sorting only apply to the group as a whole, without affecting the internal elements.

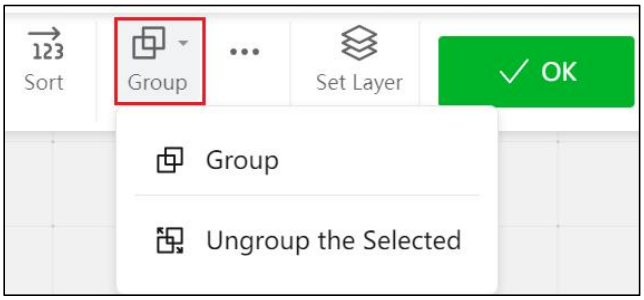


Figure 3-15 Group

- Group: Select the target graphics and click ***Group*** to combine them.
- Ungroup the Selected: Select a grouped object, and click ***Ungroup the Selected***. The elements revert to independent graphics without splitting any curves.

### 3.9.2 Array

Used for quickly duplicating the selected graphics. Select the target graphic, and click ***Array*** to open the ***Rectangular Array*** window. Set the ***Number and direction of arrays*** and ***Offset Method*** to complete duplication.

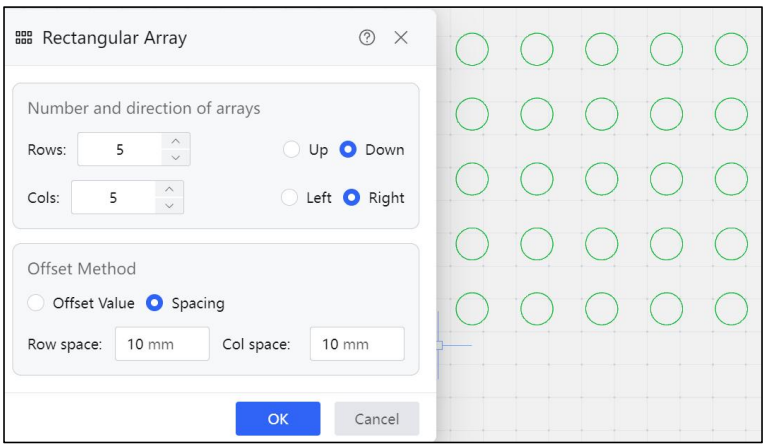


Figure 3-16 Rectangular array example

### 3.9.3 Fly Cut

***Fly Cut*** is designed for regular arrangements of geometric shapes such as rectangles and circles. By applying the scan-cutting algorithm, line segments in the same direction are merged into continuous cutting paths. It is recommended to sort the target graphics before applying ***Fly Cut*** to optimize scanning paths and reduce travel time.

According to the geometric features, select the appropriate mode from the ***Fly Cut*** drop-down menu: ***Linear Fly Cut***, ***Obround Fly Cut***, and ***Circle Fly Cut***. Partial parameters are described below:

- Linear Fly Cut: Suitable for regularly arrayed graphics.

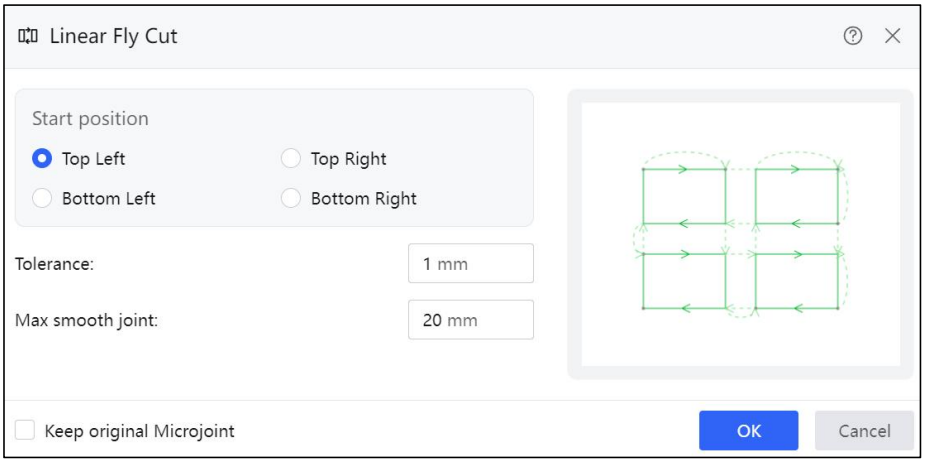


Figure 3-17 Linear fly cut

- Start position: Sets the starting point for the scanning cut.
- Tolerance: When connecting the line segments in the same direction, any segment within this tolerance distance from the scan line will be merged into the same fly cutting path.


Figure 3-18 Tolerance example

- Max smooth joint: When switching from one scan row to another, short gaps below this value can be bridged with a smooth connection.

➢ Circle Fly Cut: Suitable for regularly arranged circles.

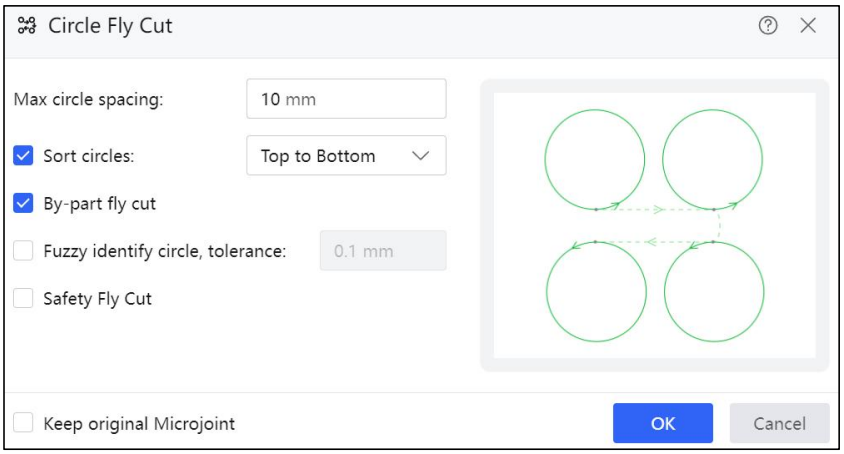


Figure 3-19 Circular fly cut

- Max circle spacing: Maximum spacing allowed between two adjacent circles. If the actual distance exceeds this value, ***Fly Cut*** will not be applied.
- Sort circles: Sorts circles before performing ***Fly Cut***. If ***By-part fly cut*** is also checked, ***Fly Cut*** is executed within each part first according to the sorting result, then moves to the next. If only ***Sort circles*** is enabled, all selected shapes are globally sorted before performing ***Fly Cut***.

➢ Obround Fly Cut: Suitable for rounded rectangles or obround-shaped graphics.

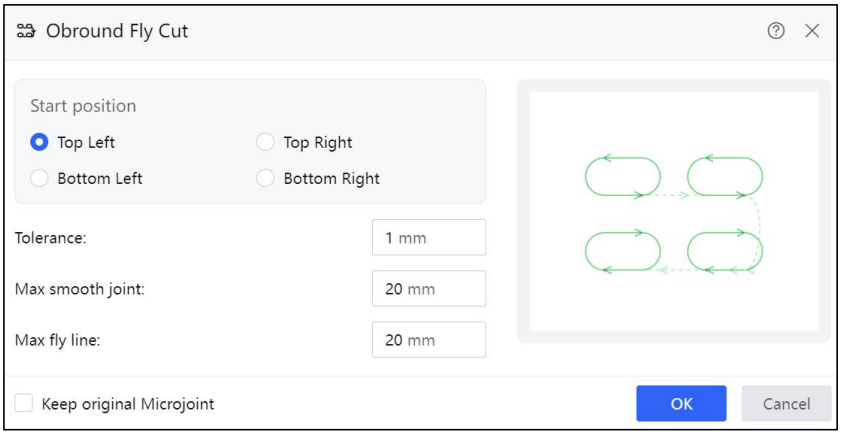


Figure 3-20 Obround fly cut

- Max fly line: Defines the maximum spacing between adjacent graphics that can be connected with ***Fly Cut***.

### 3.9.4 Co-edge

This function is used to merge parts that share the same edge. Sharing a single cutting path can significantly reduce the total cutting length and improve cutting efficiency. ***C Type Co-edge*** is suitable for rectangular parts. The cutting logic is described as follows:

1. Cut the internal holes and three edges of the first part.
2. Defer cutting the co-edge until cutting the adjacent part.
3. The first part is fully separated from the plate only after the second part is cut, effectively preventing collisions and vibrations.

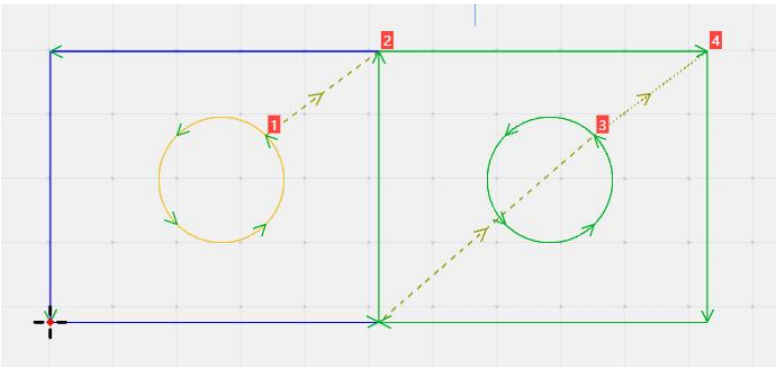


Figure 3-21 C type co-edge example

Notice:

1. Currently, only the outer contours of graphics are supported for co-edge cutting. Lines within internal recessed areas of graphics cannot be co-edged.

2. Co-edged graphics are treated as a group. If the graphic contains internal features (e.g., small holes), group them first before applying ***Co-edge*** to ensure correct cutting order and inner/outer relationships.

3. To retain compensation after co-edge, first apply ***Kerf Compensation***, then perform ***Co-edge***.

### 3.9.5 Cutoff Line

When the remnant plate is irregular, jog cutting or ***Quick CutOff*** cannot achieve the desired result. In such cases, ***Cutoff Line*** provides a more flexible way to cut off the plate.

First, use drawing tools such as ***Line*** or ***Polyline*** to manually draw straight or curved lines. Select the curve and click ***Cutoff Line***. Once applied, the curve will be displayed in yellow with a blade-shaped marker. By default, the cutoff line is assigned to the last layer for machining. Before cutting, verify that the corresponding machining technique parameters are set correctly..

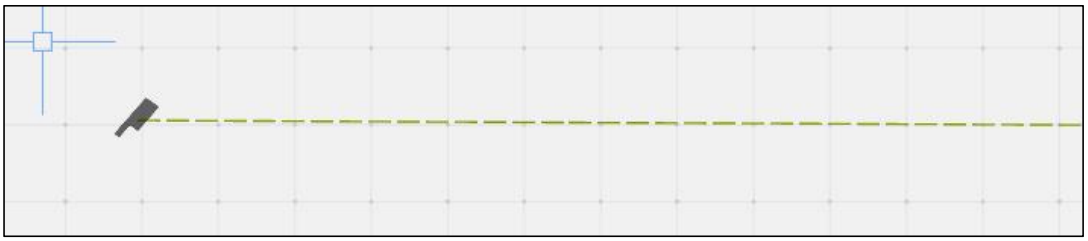

Figure 3-22 Cutoff line example

### 3.9.6 Measure

Measures the distance between two points.

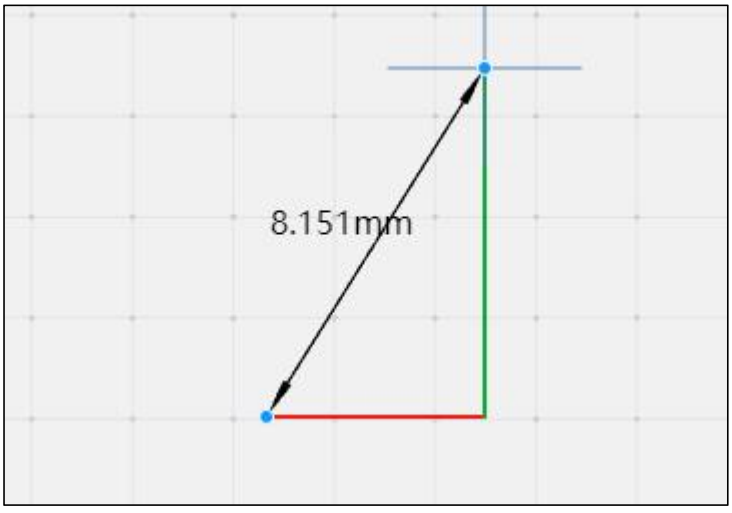


Figure 3-23 Measure

## 3.9.7 Set Layer

Provides seven layers: Large, Middle, Small, C1, C2, MK (marking), and Last. Depending on the machining requirements, you can assign different graphics to different layers. Each layer can then be configured with independent cutting, piercing, and other technique parameters.

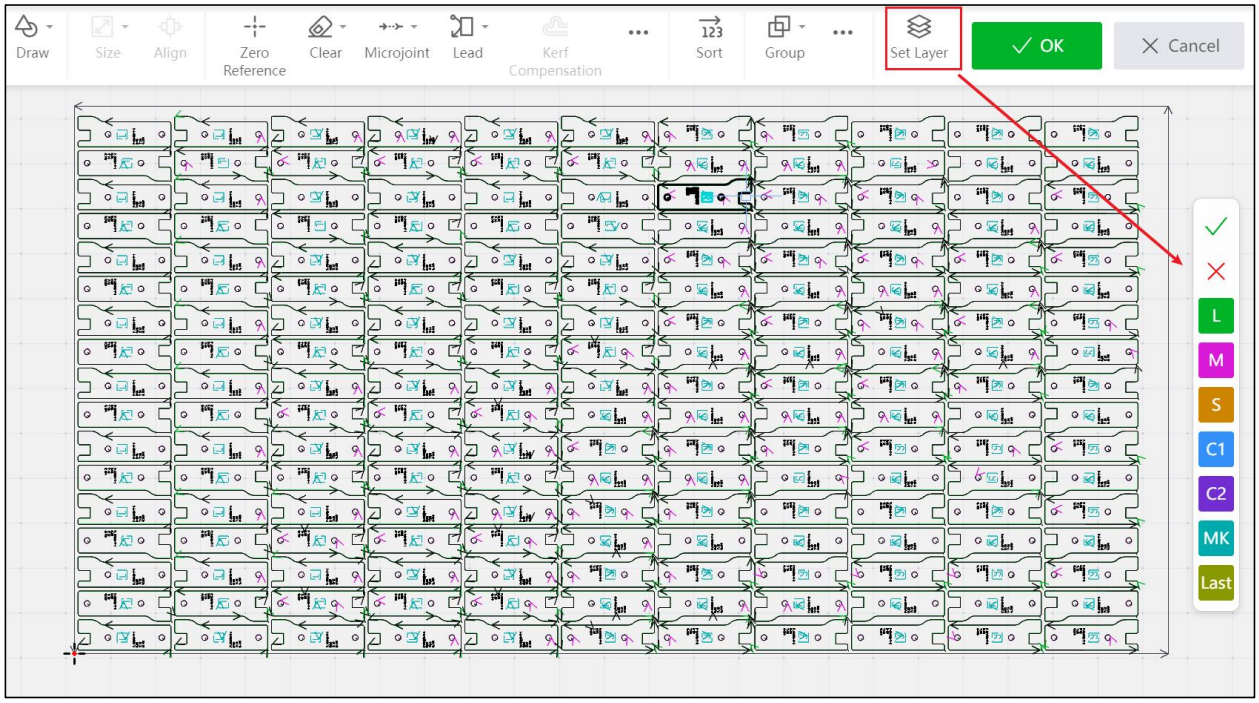


Figure 3-24 Set layer

# Chapter 4 Machining Technique Settings

Click ***Technique*** at the bottom function bar of the main interface to access the machining parameters settings. If the imported task does not contain technique information, or if the included technique data cannot be matched with the ***Technique Library***, you can select matching parameters from the library and adjust the necessary parameters, or set all the machining parameters manually.

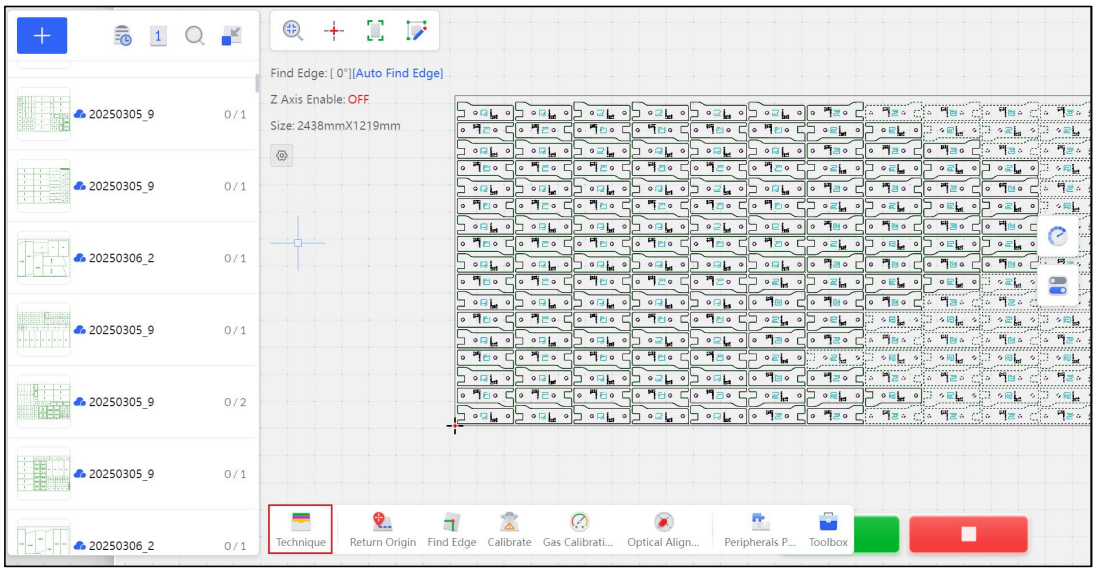


Figure 4-1 Technique entrance

⚠Caution:

1. The technique parameters are directly related to the plate materials, laser, gas pressure, etc., and must be set according to the actual production requirements.
2. All parameters shown (including those in figures) serve as illustrative purposes only—never as operational references.
3. Inappropriate or incorrect parameters may result in poor cutting results or even equipment damage (such as machine tools). Please configure with caution.
4. Displayed options dynamically change based on lasers, gas line configuration, height controller, etc. Figures are for reference only—always follow the actual software display.

On the ***Task Detail*** page, the software displays the task name, material, thickness, gas, and other basic information. It also shows key parameters for each layer (e.g., ***Large Contour***, ***Mid Contour***, ***Marking***) used in the task. If key parameters are modified within a layer, the changes will also be reflected on the ***Task Detail*** page.

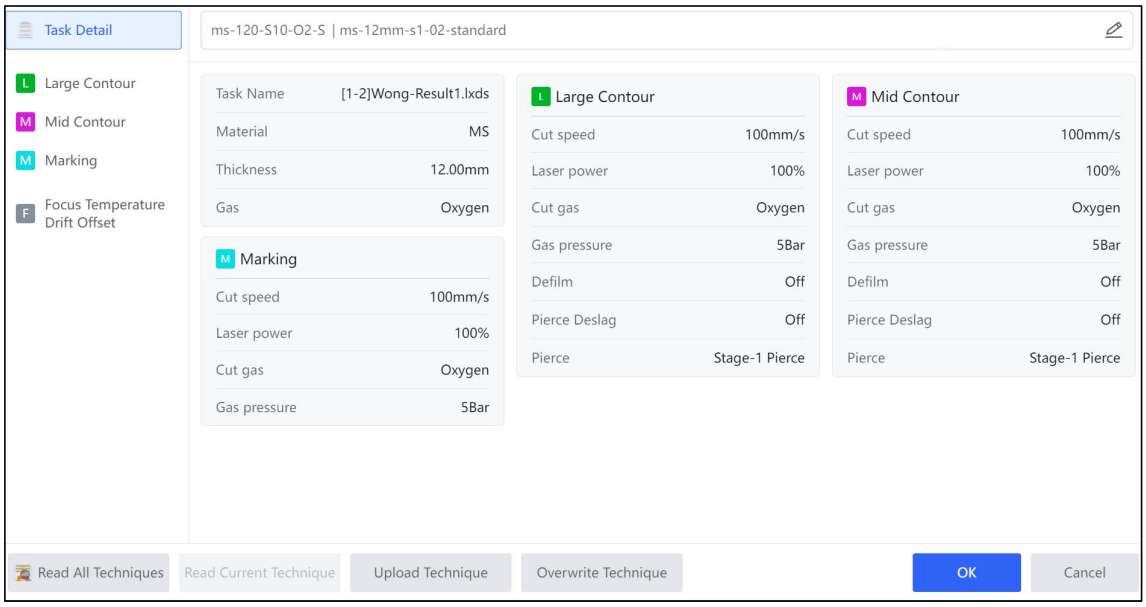


Figure 4-2 Task detail

## 4.1 Parameter Descriptions

### 4.1.1 Cut Params

HypCutRevo offers 7 layers, each allowing independent parameter settings for cut speed, laser power, cut gas, nozzle distance, etc. Depending on actual production requirements, you can also enable functions (including smart and auxiliary techniques) on the right panel to further improve cutting quality.

Once the parameters for the current layer are set, they can be quickly applied to other layers using ***Copy Params***.

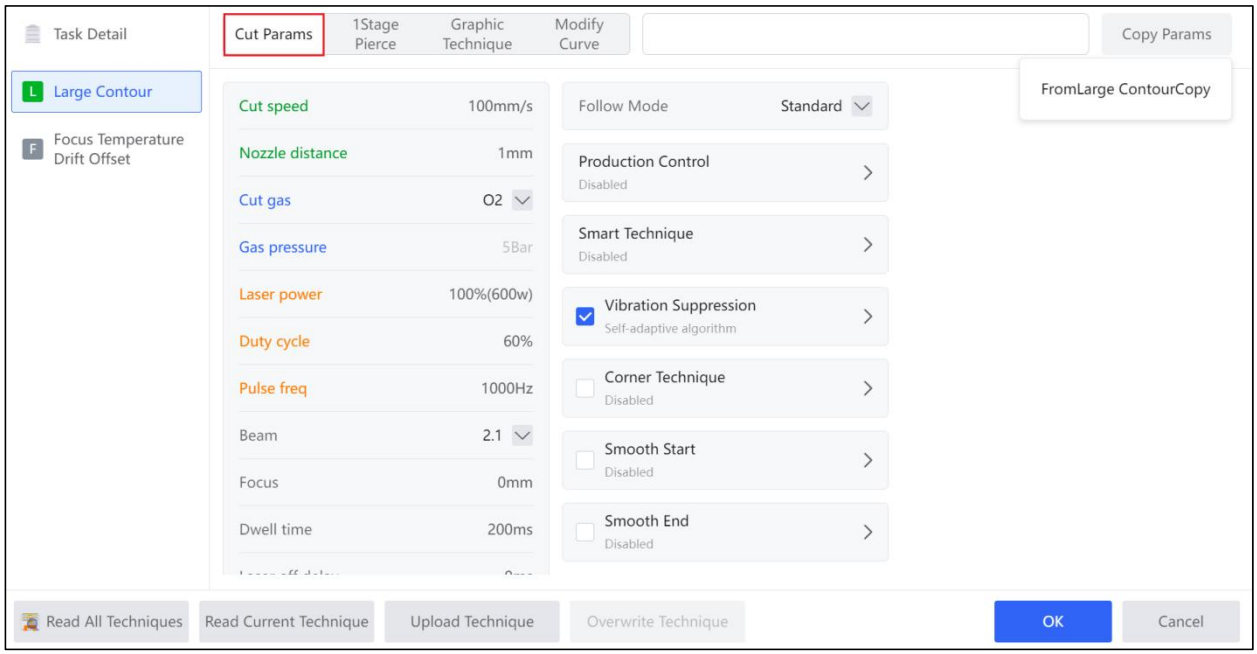


Figure 4-3 Cut parameters

The cut parameters are described in the table below:

**Table 4-1 Cut Parameters Description**

| Category | Name | Description |
|---|---|---|
| General Cut Parameters | Cut speed | Sets the target cutting speed. Actual speed may be lower due to acceleration/deceleration at path starts/ends and corners. |
| | Nozzle distance | Distance between the cutting head and the plate surface during cutting. |
| | Cut gas | Sets auxiliary gas to be used for cutting: air, oxygen, nitrogen. |

| Category | Name | Description |
|---|---|---|
| | Gas pressure | Sets the gas pressure of the auxiliary gas during cutting, requiring a proportional valve/multi-gas valve. |
| | Laser power | Sets the fiber laser's peak power, which determines the maximum cutting power that can be achieved when cutting. For example, with a 3000 W laser, if the peak voltage is set to 80%, the max cutting power is: 3000 W × 80% = 2400 W. |
| | Duty cycle | Sets PWM modulation duty cycle for controlling laser energy density. |
| | Pulse freq | Sets PWM carrier frequency (pulses per second). Higher values yield more continuous output. |
| | Beam | Cutting head default parameter. For cutting heads that support beam-size switching, toggle between beam sizes here. |
| | Focus | The distance between the focus and plate surface. |
| | Dwell time | Sets the extended piercing duration for complete plate penetration. |
| | Laser off delay | Sets the extended machining time to ensure complete cutting. |
| Follow Mode | Standard | Performs standard cutting according to the set parameters (default). |
| | Fixed height cut | The cutting head is fixed at a certain height for cutting (Z-axis locked at preset coordinate). |
| | Out-plate follow | Commonly used for cutting off plates. When this mode is selected, the cutting can start outside the plate. During machining, the cutting head stays at the preset height outside the plate, and then activates the following mode upon detecting the plate. |
| Production Control | Not Cut | Skips cutting for all graphics on the current layer. When enabled, the layer icon appears grayed out. |
| | Keep gas on | The assist gas remains on throughout the entire cutting process. When enabled, a gas-on icon shown beside the layer name. |
| | Defilm | ● Used to remove rust and protective film from the plate surface.<br>● When enabled, a ***Defim*** page appears. Before enabling, the dedicated parameters for defilming need to be set.<br>● Before cutting starts, the cutting head will perform a vertical |

| Category | Name | Description |
|---|---|---|
| | | film-removal process on the plate surface area according to the specified parameters. |
| | Pierce Deslag | ● Removes molten slag from the thick-plate piercing. When enabled, a preset slag removal technique can be automatically executed to remove slag after piercing.<br>● Deslag outside in (Off): The cutting head performs piercing, then follows to the cutting height. After that, it lifts up to the slag removal height to remove slag outward.<br>● Deslag outside in (On): The cutting head performs piercing, and follows to the cutting height. Then, it lifts up to the slag removal height and moves to the maximum slag radius before inward cleaning. |
| Smart Technique (Only for BLT Cutting Heads) | Pierce Detection | Automatically verifies complete penetration after piercing. Triggers alarm if incomplete, preventing processing failure and equipment damage. |
| | Co-edge pierce detection | ● Requires BLT-H series cutting head.<br>● The graphics need to add overcut/laser on distance settings (recommended in CypNest).<br>● When enabled, the system will automatically detect whether or not to perform piercing at the start of the co-edge, requiring dedicated piercing parameters (not ***Smooth Pierce***). |
| | Smart End | When enabled, achieves dross-free termination at the endpoints of enclosed contour cutting paths, with effective application across all machining toolpaths. |
| | Pierce Enlarge | ● During thick-plate cutting operations, transitioning from piercing to cutting with undersized holes may cause instantaneous thermal bursts.<br>● When enabled, it effectively reduces thermal burst hazard and decreases protective window replacement frequency. |
| | Kerf width | Requires BLT-MA series cutting heads. Adjusts kerf width based on molten pool monitoring. |
| Auxiliary | Vibration | When enabled, minimizes slag-induced vibration. ***Adaptive Algorithm*** is |

| Category | Name | Description |
|---|---|---|
| Technique | Suppression | enabled by default, but you can customize the suppression time and level based on plate thickness. |
| | Corner Technique | Applies specialized parameters when cutting sharp angles (below the set threshold) to improve quality. |
| | Smooth Start | Optimizes initial cutting quality. Separate settings are required for length, speed, duty cycle, pulse frequency, and start height. |
| | Smooth End | Enhances finish quality for the toolpath endpoint. Separate settings are required for length, speed, duty cycle, pulse frequency, and gas pressure. |

## 4.1.2 Pierce Params

HypCutRevo supports up to 9-stage piercing configurations, allowing parameter copying between stages for efficient setup.

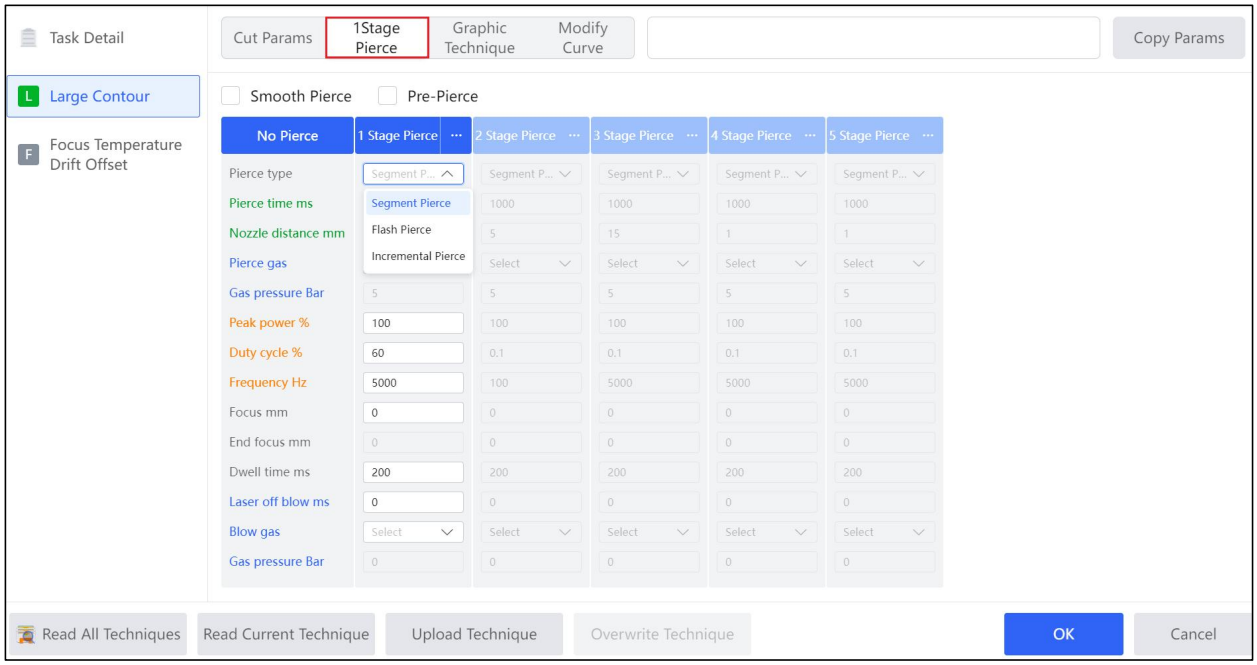


Figure 4-4 Pierce parameters

The pierce parameters are described in the table below:

**Table 4-2 Pierce Parameters Description**

| Name | Description |
|---|---|
| No Pierce | Select this option if piercing is not required during cutting. |
| Segment Pierce | Applicable to all plate types—stable and simple. |

| Name | Description |
|---|---|
| Incremental Pierce | The cutting head moves gradually from higher to lower positions to pierce the plate, minimizing burrs and improving initial cut quality. |
| Flash Pierce | Optimized for thick plates. Achieves rapid penetration through dynamic frequency/focus/power modulation. It is recommended to use with ***Segment Pierce*** for optimal results when plate thickness exceeds 12 mm. |
| Smooth Pierce | It is ideal for thin-to-medium plates, boosting machining efficiency and extending protective window lifespan. During Z-axis descent, laser activates after reaching the set pierce height, and the cutting head starts cutting after following in place. |
| Pre-Pierce | When enabled, pierces at the starting point (or the lead start point) before formal cutting begins. |

### 4.1.3 Graphic Technique Parameters

Before setting the graphic technique parameters, ensure the graphics already add microjoints, leads, or compensations. Additionally, in ***System Settings*** → ***Production***, enable ***Adjust Microjoint and Gap in tech table*** and ***Adjust kerf offset in tech table***.

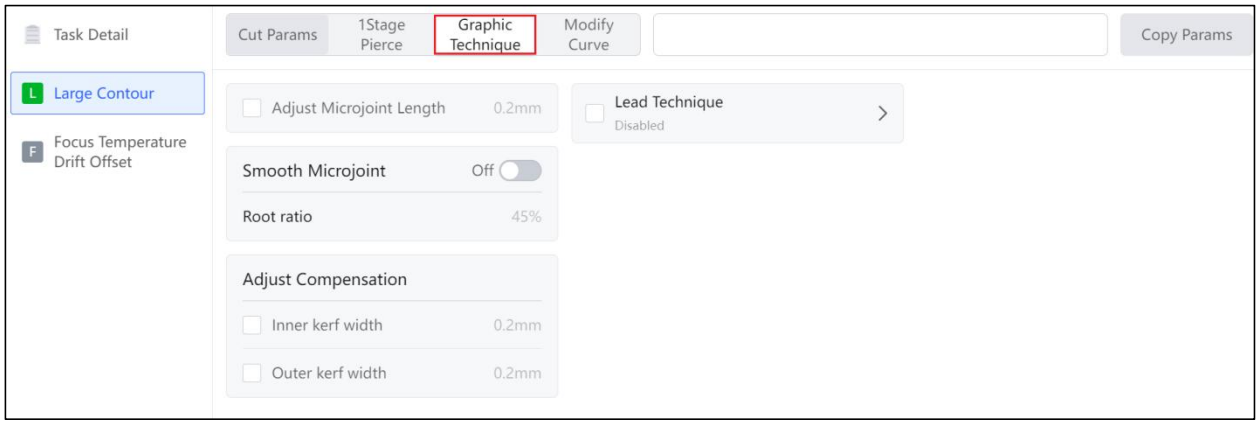


Figure 4-5 Graphic technique parameters

The graphic technique parameters are described in the table below:

**Table 4-3 Graphic Technique Parameters Description**

| Category | Name | Description |
|---|---|---|
| Microjoint | Adjust Microjoint Length | Modifies the microjoint length for the current layer. |
| | Smooth Microjoint | Converts the added microjoints in the current layer to smooth microjoints. Compared with traditional microjoints, this function uses lower power output at the |

| Category | Name | Description |
|---|---|---|
| | | microjoints to reduce vertical height deviation and minimize pierces. ***Root ratio*** can also be adjusted to facilitate easy part removal. |
| Adjust Compensation | Inner/Outer kerf width | Set based on actual kerf width. It is recommended to perform a test cut and measure the kerf, then set the compensation value (compensation value = $\frac{1}{2}$ kerf width). |
| Lead Technique | Lead Slow Descent | Activates the laser at preset lead height. The cutting head synchronizes lead cutting and vertical descent to the cut height. ***Stable distance*** defines the distance from the cut height to the cut start. |
| | Lead Circle | When the ***Lead Circle*** is enabled, a separate cut speed is required for the circle. |
| | Lead Variable Focus | Implements focus shift during lead cutting, starting with the lead focus and transitioning to the cut focus after a specified distance. |

### 4.1.4 Modify Curve

When enabled, you can define custom power and frequency curves. During cutting, the software dynamically adjusts laser power (via PWM duty cycle) and frequency based on the defined curves, helping to improve cutting quality—especially at corners.


Figure 4-6 Modify curve

***Modify Curve*** allows independent editing of power and frequency curves. The horizontal axis represents cutting speed, while the vertical axis represents cutting power or frequency.

- Add: Click ***Add*** or double-click at the target position on the curve to insert a new power/frequency node. After adding, the node can be dragged to adjust its position.
- Smooth Type: Supports ***Linear***, ***Segmented***, and ***Smooth***.
- Save to File/Read from File: Power/frequency curve files can be saved locally or imported from files.
- Copy to frequency curve: Once the power curve is completed, it can be copied to the frequency curve with one click for quick application.

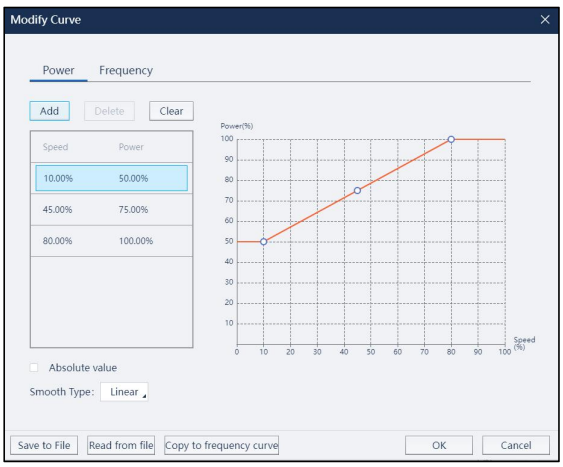


Figure 4-7 Modify curve

## 4.2 Focus Temperature Drift Offset (Only for BLT Cutting Heads)

During high-power cutting, the internal temperature of the cutting head increases, which can cause focal drift and affect cutting quality. HypCutRevo supports ***Focus Temperature Drift Offset***, allowing you to adjust the ***Offset factor*** (range: 0.5 to 3.6) based on plate thickness and cutting power. This ensures processing stability and consistent cutting quality.

When uploading a technique, the ***Offset factor*** is saved to the technique library together with the layer parameters. Similarly, when reading a technique from the library, this value is applied simultaneously.

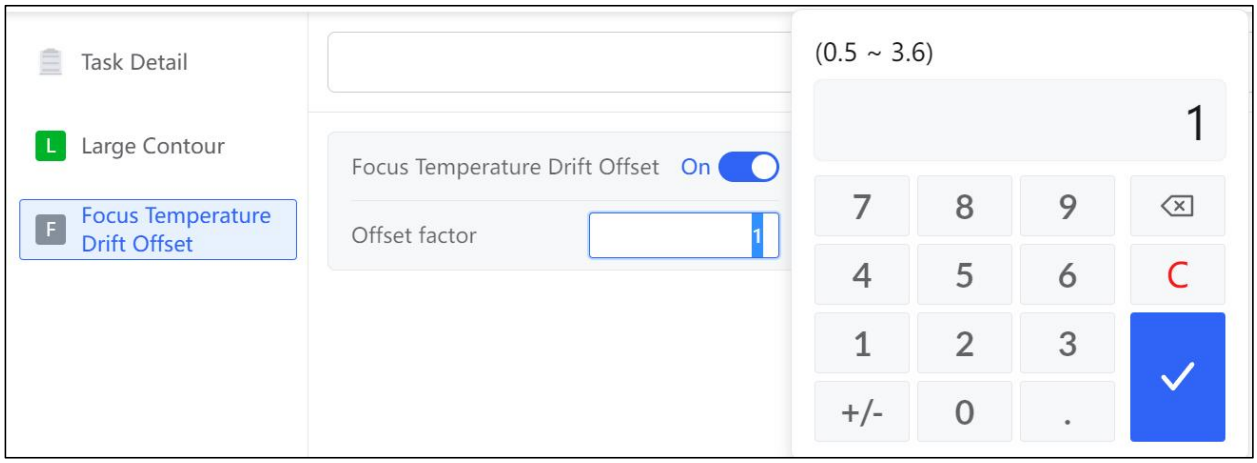


Figure 4-8 Focus temperature drift offset

## 4.3 Technique Upload and Reading

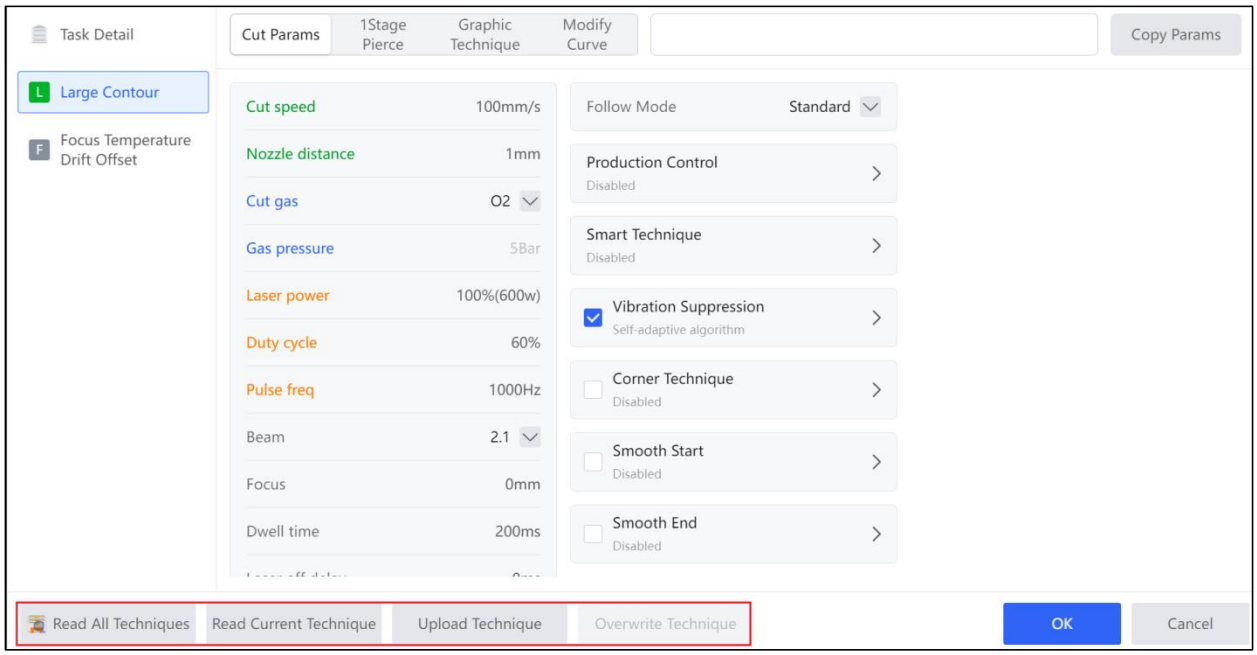


Figure 4-9 Upload/Read technique

- Read All Technique: Reads an entire technique package from the technique library and applies it to all layers of the task.
  - The button is available when the opened task has no technique data; if the task already contains technique data or a technique has been read, the button is disabled.
  - After clicking, the software automatically filters and matches techniques based on the task's material, thickness, and gas. The selected technique can be applied upon confirmation.
  - If no matching technique is found in the library, manual selection is required.
- Read Current Technique: Reads technique data for a single layer from the library and applies it to the current layer.
  - The software automatically filters and matches techniques based on the task's material, thickness, layer name, and gas.

- Upload Technique: Uploads technique data for all layers of the current task to the technique library at once, including the ***Focus Temperature Drift Offset*** layer.
  - If the target material does not exist in the ***Material*** drop-down menu, you need to create a new entry on the ***Manage Materials and Nozzle*** page. Ensure unique naming to avoid duplicates.

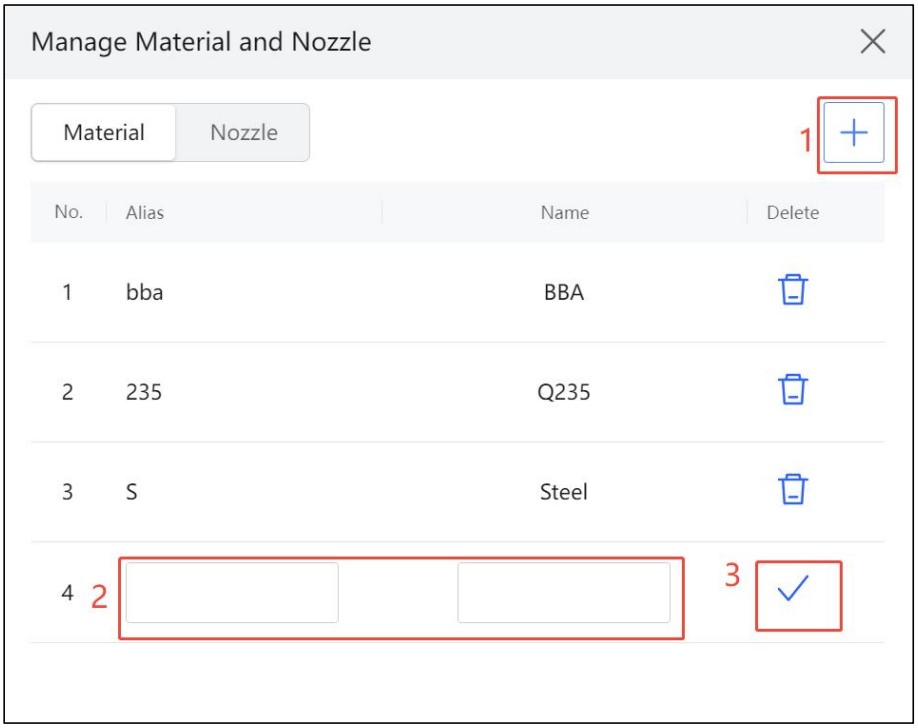


Figure 4-10 Add the material-nozzle entry

- Overwrite Technique: Available only after ***Read All Technique*** is executed. If technique parameters are modified after reading, you can use ***Overwrite Technique*** to save the changes and replace the corresponding data in the library.

# Chapter 5 Control Center

## 5.1 Data Monitor

During machine operation, HypCutRevo continuously monitors all components and dynamically displays key operating parameters such as gas pressure, feed speed, laser power, protective window temperature, and nozzle distance on the ***Data Monitor*** page. This enables you to observe and assess machining conditions in real time.

When configured with a BLT cutting head, the software supports gas pressure and temperature rise alarms. As the gas pressure or window temperature approaches the preset warning threshold (approx. 75%), the corresponding value color will gradually change from blue to red/orange. You can then take timely corrective actions to ensure cutting stability and safety.

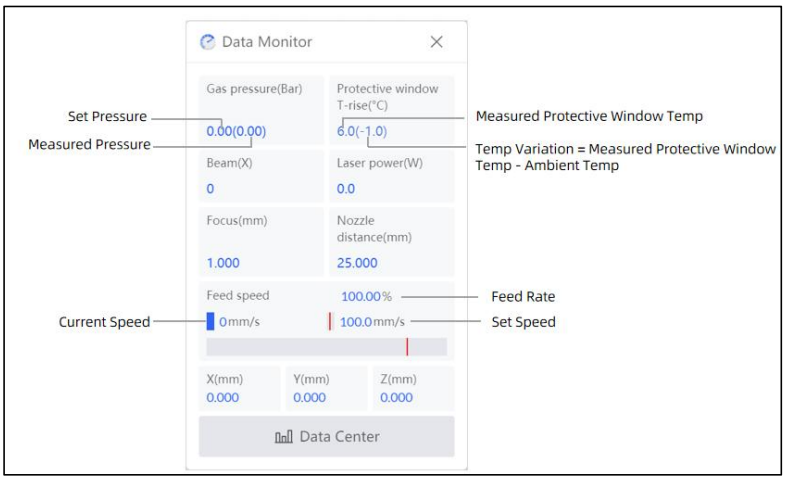


Figure 5-1 Data monitor

Navigate to ***Data Center*** → ***Statistics*** to open the dashboard to review the machine's historical production data. This feature helps track production performance and adjust production schedules based on statistical results.

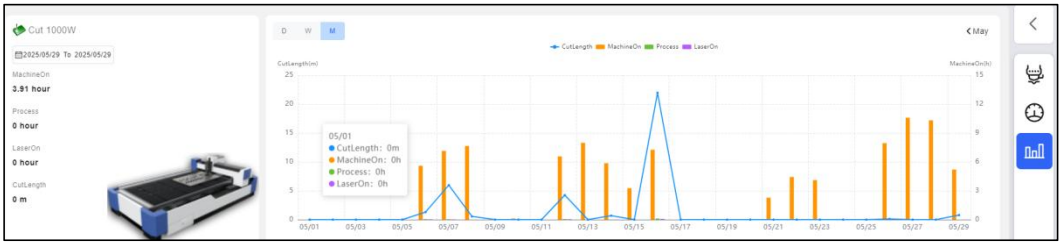

Figure 5-2 Statistics

## 5.2 Console

The console provides functions related to cutting head control, laser burst test, jog control, and machining assistance. The displayed functions automatically adjust according to the connection status of HyPanel2 and the WKB Wireless Remoter. Function button descriptions are as follows:

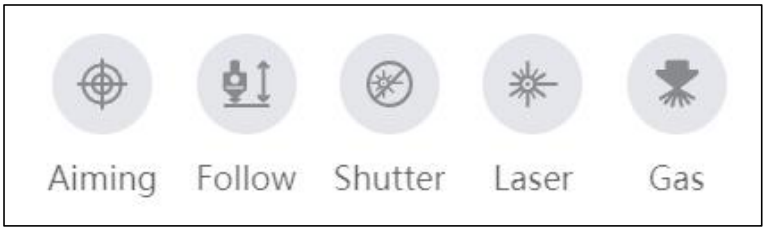


Figure 5-3 Console - jog control

- Aiming: Controls the laser aiming's on/off state.
- Follow: When enabled, the system enters the ***Follow*** mode, meaning the cutting head is positioned at a specific location on the plate surface.
- Shutter: Controls the laser shutter's on/off state.
- Laser: Activates laser after the ***Shutter*** is on.
- Gas: Controls the cutting head's gas blow on/off state.


Figure 5-4 Console - laser burst test

- Gas type: Sets the auxiliary gas used during gas blowing.
- Gas pressure: Sets the pressure of the auxiliary gas during gas blowing, requiring a proportional valve/multi-gas valve.
- Laser burst test: Supports Optical Alignment and Tape Shot.

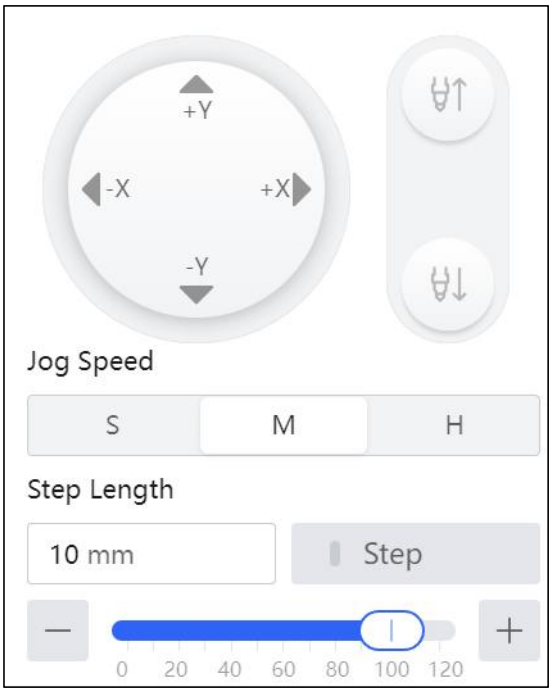


Figure 5-5 Console - jog/step

- Jog/Step buttons: Manually control the X, Y, and Z axes to move in positive or negative directions using either jog or step mode.
- Jog Speed: Sets the slow/medium/high jog speed for each axis.
- Step: When checked, each axis enters a step motion mode. You need to set the ***Step Length***.
- Feed Speed: Displays speed rate, target speed, and real-time speed.
  - During machining technique tuning, the speed can be adjusted during cutting to facilitate the tuning process.
  - During production, the adjustable feed rate range is from 0% to 120%, with a default of 100%.
  - Alternatively, you can rotate the knob on the HyPanel2 counterclockwise to decrease or clockwise to increase the feed rate.

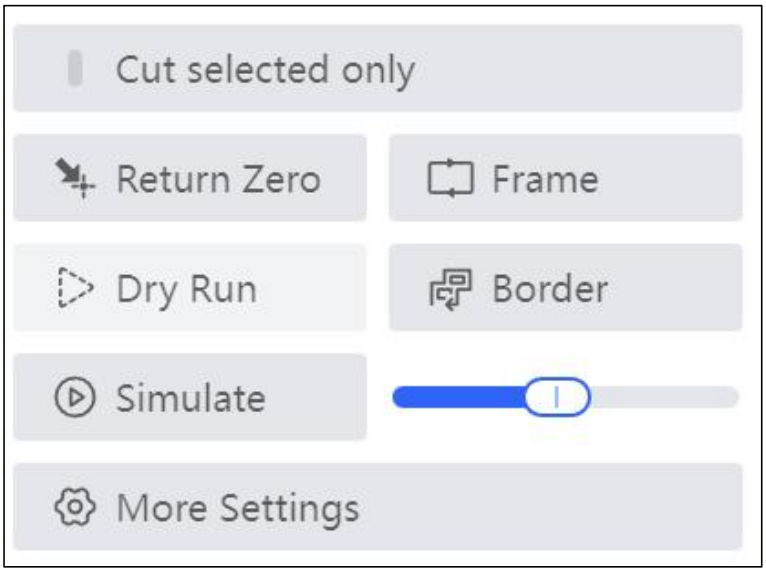


Figure 5-6 Console - production auxiliary functions

- Cut selected only: When only specific graphics of a drawing require machining, you can enable this function and then press ***Start***. At this point, the unselected graphics will be skipped during cutting.
- Return Zero: Moves the cutting head to the preset zero position. Typical use scenarios are as follows:
  - If the machining process is interrupted due to peripherals errors (e.g., laser/gas failure) while the machine coordinate system is not affected, press ***Return Zero*** to directly locate the zero position.
  - If the machine is powered off suddenly or a servo alarm occurs, which leads to the deviation of the machine coordinate system, it is recommended to execute ***Return Origin*** to reset coordinates and then click ***Return Zero***.
- Frame: Verifies machining position accuracy before cutting. Click ***Frame***, and the software automatically drives the cutting head along the bounding rectangle of the target graphics, with ***Aiming*** enabled for visual confirmation. This function determines the approximate size and range needed to machine on the plate.
- Dry Run: Simulates full cutting path without laser/gas. You can choose whether to enable ***Follow***. All the motions (including pre-piercing travel, speed, acceleration/deceleration, etc) are exactly the same as the actual machining process. Similarly, ***Dry Run*** process supports auxiliary operations (pause, continue, forward, backward, and breakpoint), and allows

parameter adjustments during pauses before resuming ***Dry Run***. This function is suitable for a comprehensive pre-cut check and simulation of the overall machining process without cutting.

- Simulate: Used to verify the toolpaths. No physical machine tool movement is required. Adjust the simulation speed by dragging the speed slider on the right.
- Breakpoint: Automatically recalls the last stop position after manual pauses or unexpected interruptions. The function is accessible when there is no graphic/technique parameter changes and no new round of machining initiation.
- Forward/Backward: Used to retrace the machining toolpaths during pauses. Distance and speed can be configured in ***System Settings*** → ***Motion Control Parameters*** → ***Other***.
- More Settings
  - Find edge before cutting: Defines whether to perform automatic edge finding before machining. Before cutting, the system performs ***Capacitive Find Edge***. This operation searches for plate vertices along the plate edge, calculates the skew angle, and then synchronously corrects the angle of the target graphics. It is intended to ensure that the graphic to be cut is parallel to the plate.
  - Clear plate skew angle after production: Clears the edge-finding result when it is no longer needed.
  - Return to: Determines where the cutting head returns after each cutting finishes. Options include ***End Point***, ***Zero Point***, ***Start Point***, ***Origin***, and ***Mark Point***s.


Figure 5-7 Console - marks

- Mark: Click the settings button at the bottom right to define a specific coordinate within the machine's working area for quick cutting head positioning.
  - Edit Marker: Move the cutting head, select the marker number, and read the current coordinate. Or manually enter the X and Y coordinate values to the selected marker

number.

- Locate to Mark: After determining the marker number, click ***Locate to*** to move the cutting head to the corresponding position.
- Memory Zero: Recovers the last machining zero position after unexpected interruptions, even if the ***Start*** button was accidentally pressed.

---

⚠Notice:

1. When returning to a mark point, Z-axis automatically goes up to the maximum height first.
2. Up to 6 sets of mark points can be recorded.
3. Each mark point can have a custom name, but system names cannot be modified.

---

# Chapter 6 Production Assistance

## 6.1 Task Management

All imported files are displayed in the task list for unified management The list can display up to 9,999 tasks. Additionally, the list supports automatic loading and unloading in conjunction with a loading and unloading storage control system, enabling multi-task machining. The list becomes locked (grayed out) during active machining.

Each task entry shows a thumbnail, task name, quantity, and relevant notifications. Clicking a task quickly loads the drawing into the Drawing Display Area. Swipe left with a single finger for quick select/lock/delete; long press and drag to adjust the task order.

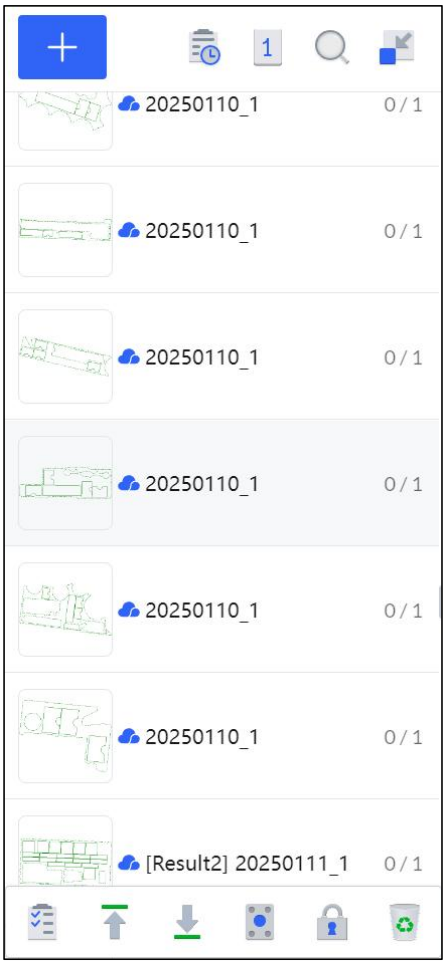


Figure 6-1 Task list

The common task list functions are described as follows.

**Table 6-1 Task List Management Description**

| Icon | Name | Description |
|---|---|---|
|  | Finished Cut List | Tasks that have completed machining automatically move to this list. Completed tasks can be re-added to the pending task list. |
|  | Production Mode | • Single Time Production (Default): Stops machining after completing one run.<br>• Single File Production: Requires the automated pallet changer. Stops after reaching the set quantity.<br>• List Order Production: Requires the automated pallet changer. Process all tasks from top to bottom in list order. |
|  | Search/Filter | Quickly select target tasks using information such as the name, gas, material, and thickness. |
|  | Display | Switches the task list display mode. Minimizing the list helps save interface space. |
|  | Multi-Select | Enables batch operations, including lock, delete, move to top, or move to bottom. |
|  | Top/Bottom | Quickly adjusts the selected task to the top or bottom. |
|  | Parts Mode | Expands the selected task into a detailed part list. You can add parts to the existing nesting result, and modify graphics. |
|  | Lock | Locks selected tasks to prevent machining. Click again to unlock. In the ***List Order Production*** mode, it is recommended to open the task in a locked state to avoid accidental machining. |
|  | Delete | Removes the selected task from the list. |
|  | Missing Technique | Indicates that the imported task does not carry technique data. Machining technique parameters must be set before production. |
|  | Cloud Task | Indicates tasks imported from the cloud. The planned quantity cannot be modified. |
|  | Breakpoint Exists | Indicates the task has a breakpoint. You can choose to resume production from the breakpoint. |

## 6.2 Start Cutting from Any Position

HypCutRevo supports starting cutting from any user-defined position. Simply right-click on the desired point along the cutting path and select ***Locate here***.

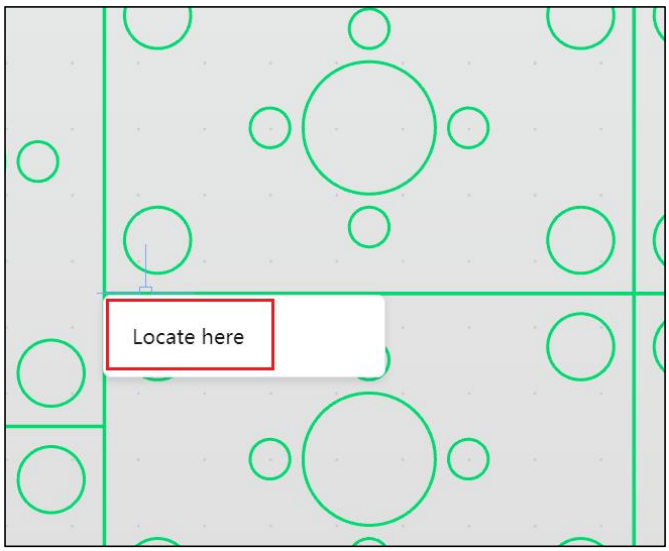


Figure 6-2 Locate here

For safety, after selecting ***Locate here***, a confirmation dialog appears. Once confirmed, the cutting head will travel to the selected position and enter the paused state. During this paused state, you can use ***Forward*** or ***Backward*** for precise location before starting the cut. Then, click ***Start***, and any toolpath prior to the specified location will be skipped.


Figure 6-3 Confirm locate here

## 6.3 Monitoring and Alarm

HypCutRevo monitors alarms during machine operation, it immediately displays alarms with a red title bar and initiates safety measures like motion stop. Most operations remain disabled until the alarm is resolved—always inspect and clear the alarm before proceeding.

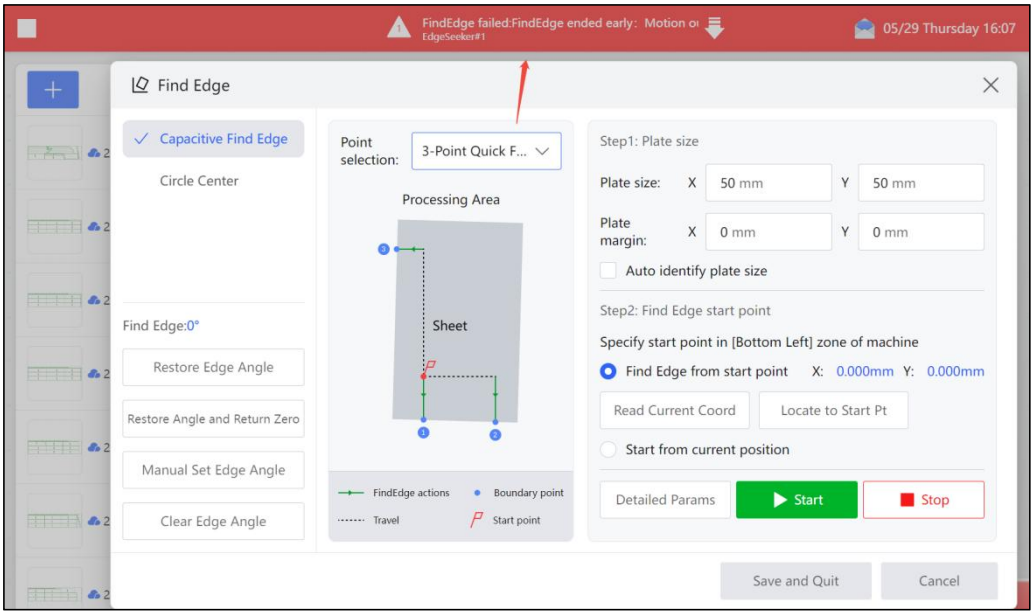


Figure 6-4 Find edge failure alarm

The red title bar disappears after the alarm is cleared. Click on the alarm message to view current/historical alarm information. Additionally, the ***Log*** retains detailed alarm records. Doubleclick the ***Production Log*** area to review historical data and check events that occurred during system operation.

Alarms can be cleared either automatically or manually. You can navigate to ***Config Tool*** → ***Alarm***, and enable ***Alarms must be manually cleared in machining***. The following are restrictions associated with specific alarm types:

- Height controller alarm: Disables X/Y-axis movement. Since the current Z-axis status is uncertain, moving the X/Y axes may pose hit-plate risks.
- Z-axis lower limit alarm: Disables travel and jog to prevent hit-plate risks.
- Emergency Stop:
  - Disables servo power to prevent unintentional activation.
  - Z-axis movement is prohibited, ensuring the machine enters a true stop state.

HypCutRevo automatically records and categorizes operational anomalies beyond alarms. These events are displayed in the ***Production Log*** window with color-coded priority levels for quick identification. It is recommended to regularly check logs to take the necessary measures as early as possible.

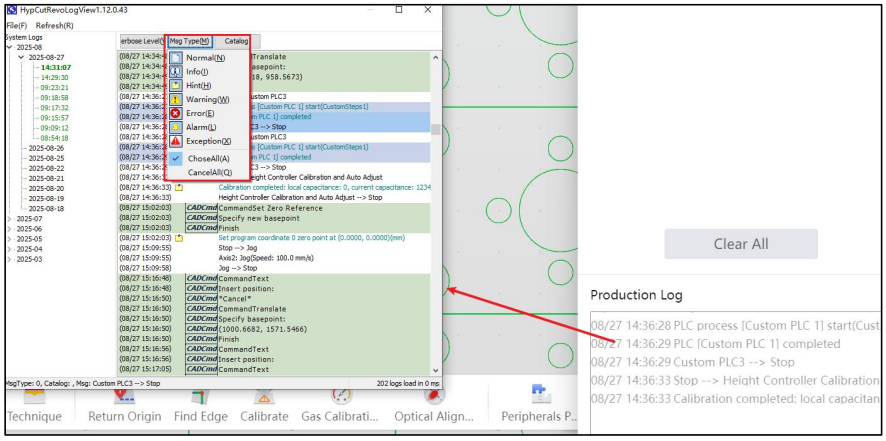


Figure 6-5 Log display

## 6.4 Soft Limit Protection

To ensure machine tool operational safety, HypCutRevo features built-in software limit protection. ***Soft Limit Protection*** is enabled by default in ***System Settings*** → ***Safety Settings***.

When enabled, the system issues warnings upon detecting potential travel range violations. At this point, all motion commands are automatically blocked to prevent collisions. Please check the graphics and machine tool position before operating.


Figure 6-6 Travel range exceeded warning

In addition, the software also monitors the machine coordinates in real-time during machine movements. Once the soft limits are exceeded, an alarm is triggered and all movements are stopped.

---

⚠Caution: Software limit protection relies on accurate machine coordinate systems. If the coordinate system is incorrect, the protection will also be incorrect. Therefore, re-establish proper machine coordinates by executing ***Return Origin*** after operations such as abnormal software shutdown and machining technique modification!

---

## 6.5 Return Origin

A reliable machine coordinate system is essential for HypCutRevo's automated machining. The machine coordinate system is uniquely determined by the machine structure and machine parameters, and can be reset through ***Return Origin***. Common scenarios requiring Return Origin:

- Initial machine installation and commissioning.
- Abnormal deviations in the machine coordinate system.
- After system startup.

Click ***Return Origin*** in the Bottom Function Bar. In the pop-up window, choose to return all axes or specify individual axes to return to the origin. In addition, in ***More Settings,*** you can select whether or not to perform focus axis return to the origin or gantry synchronization.

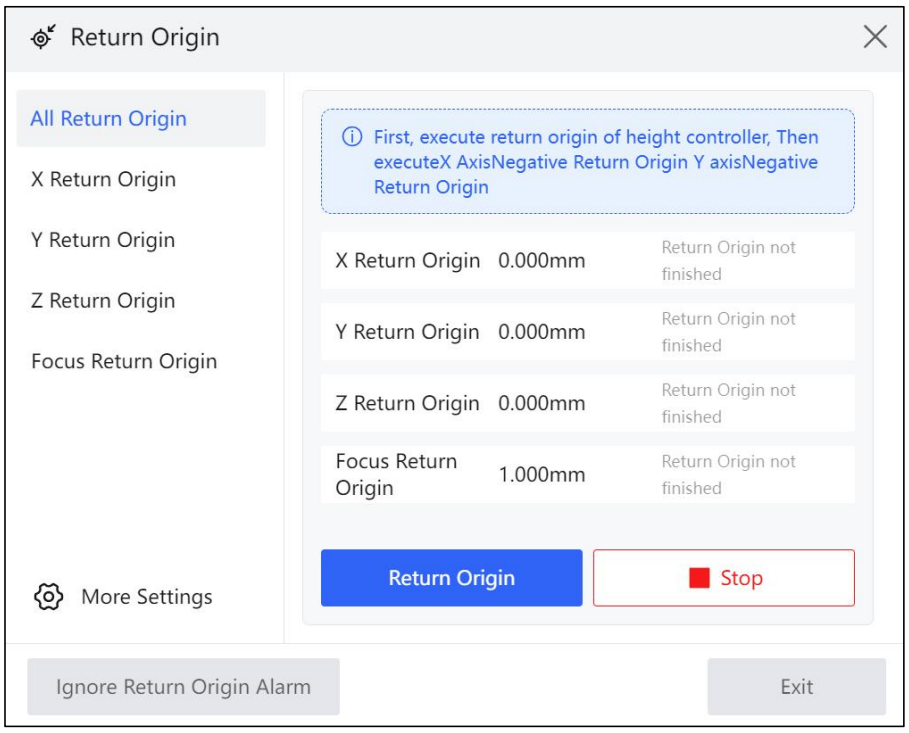


Figure 6-7 Return origin

If ***Return Origin*** is not implemented, the system will trigger an alarm to ensure the safety of equipment operation, and only low-speed jogging is allowed. All other movements are prohibited until ***Return Origin*** is performed to clear the alarm. If other active alarms exist at startup, manually clear them first before performing ***Return Origin***.

## 6.6 Find edge

Edge finding determines the skew angle of the plate placement, allowing the system to automatically correct the machining direction.

HypCutRevo supports ***Capacitive Find Edge*** and ***Circle Center***. Select the most suitable method based on material type and application requirements to determine the plate position and angle. The edge-finding result is shown on the left.

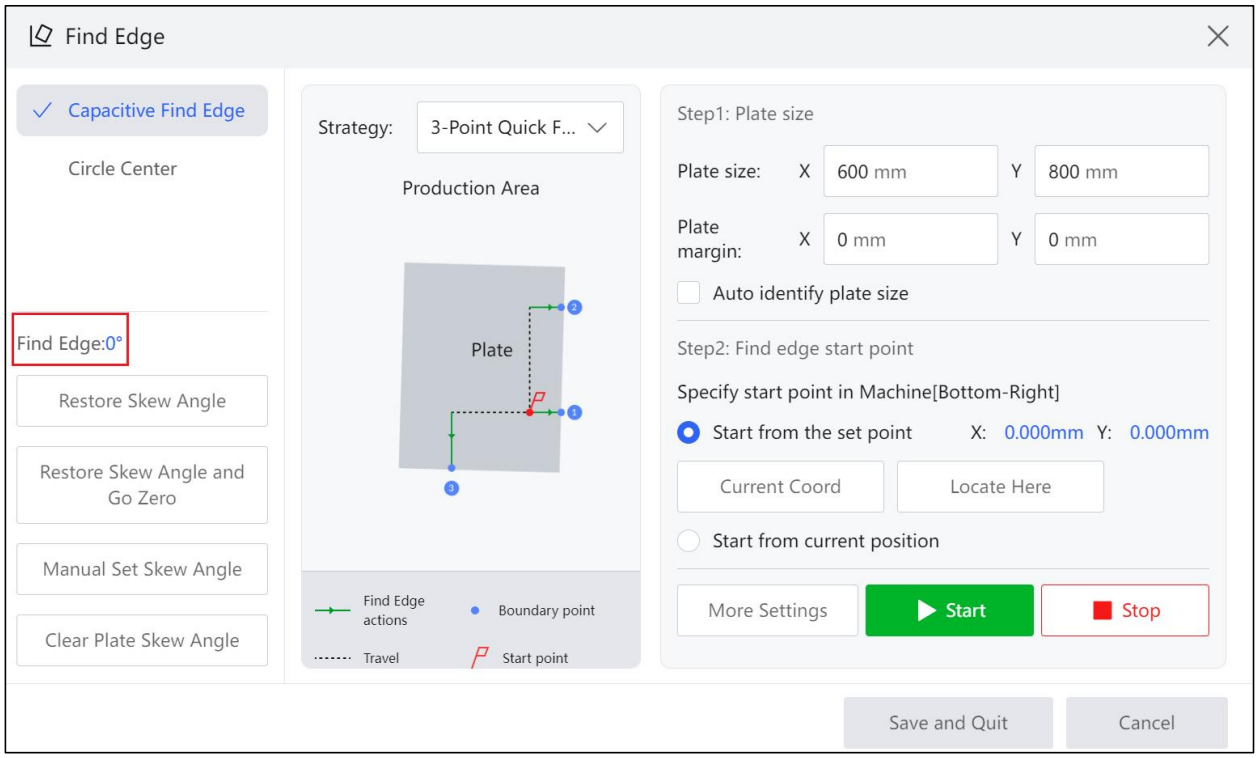


Figure 6-8 Find edge

Caution:

1. Before ***Find Edge***, please perform ***Return Origin*** to correct the machine coordinate system. Ensure that there is a plate under the cutting head for proper following.

2. The maximum allowable tilt of the steel plate on the machine should not exceed 10°.

3. When performing ***Circle Center***, do not start from the plate edge.

### 6.6.1 Capacitive Find Edge

***Capacitive Find Edge*** is a widely used method for determining plate orientation. After specifying the point selection strategy, plate size, and edge-finding start point, the process can begin.

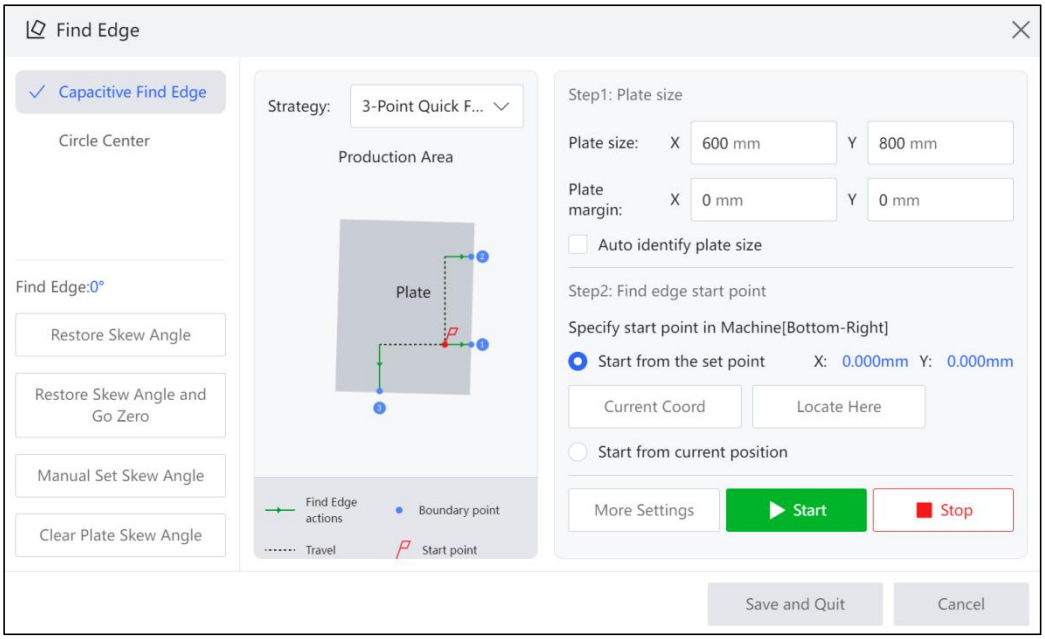


Figure 6-9 Capacitive find edge

The ***Capacitive Find Edge*** parameters are described in the table below:

- Point selection:
  - 3-Point Quick Find Edge: Standard method for quick edge detection.
  - 4-Point Quick Find Edge: Enhances accuracy by maximizing the distance between long-edge points.
  - 6-Point Quick Find Edge: Suitable for thin plate cutting, it helps to avoid the interference caused by machine tool slat on edge finding. In ***More Settings***, you can set long/short-edge points intervals during edge finding.
- Plate size:
  - Auto identify plate size: When enabled, the system auto-detects plate dimensions based on the graphic bounding box, and reads the maximum size of the drawing by default. When disabled, manually input the actual plate size.

- Plate size: When ***Auto identify plate size*** is not enabled, input X/Y plate dimensions. When inputting, you need to make sure that the parameter matches with the actual plate for edge finding. It is recommended that the input value should be slightly smaller than the actual plate size. The wrong setting may trigger a cutting head collision.
- Plate margin: The cutting head may be positioned outside plate boundaries during edge finding. Therefore, it is necessary to set an appropriate margin value to adjust the boundary offset and to prevent cutting head vibration caused by capacitive sensing fluctuation near plate edges. If the plate margin is set during part nesting, the value can be set to zero here.
  - Positive value: Offsets inward from the detected edge.
  - Negative value: Offset outward (beyond the detected edge).

➢ Find edge start point:

- Start from the set point: Each edge-finding operation starts from a fixed point. Manually jog the cutting head to the desired start position. Verify plate presence beneath the nozzle. Then, click ***Current Coord***.
- Start from current position: Each edge-finding operation starts from the current position of the cutter head. (ensure the plate is present under the cutting head).

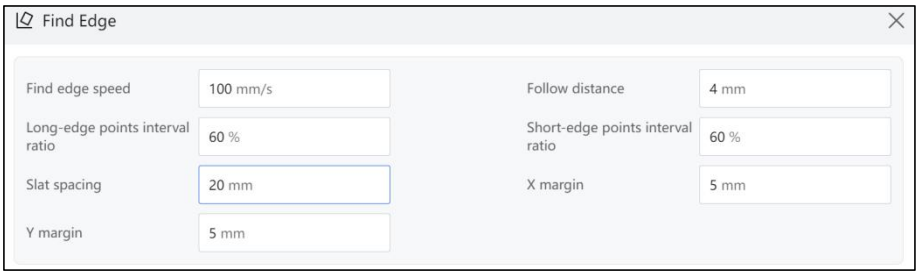


Figure 6-10 More settings

➢ More settings: Adjusts the detailed parameters related to edge-finding. Recommended to use the default values. Modifications require advanced permissions, and set the detailed parameters with caution.

- Find edge speed: Speed during edge-finding, affecting finding accuracy (default is 100 mm/s).

- Follow distance: Nozzle-to-plate distance during edge-finding (default is 4 mm).
- Slat spacing: Defines the spacing distance between neighboring slat (default is 20 mm).
- Long/Short-edge points interval: Determines the position of the two points in addition to the edge-finding start point (default is 60%).
- X/Y margin: Leaves a margin to adjust the cutting head position inward toward the plate, avoiding vibration during plate edge cutting. A positive value offsets inward toward the plate, while a negative value offsets it outward. This value can be adjusted downward appropriately if the margin is set during nesting.

### 6.6.1 Circle Center

For circular plates only, automatically locates the geometric center of round plates. After the center finding, the zero point is set at the plate center. Must set ***Zero Reference*** to ***Center*** in drawings when this edge-finding method is applied.

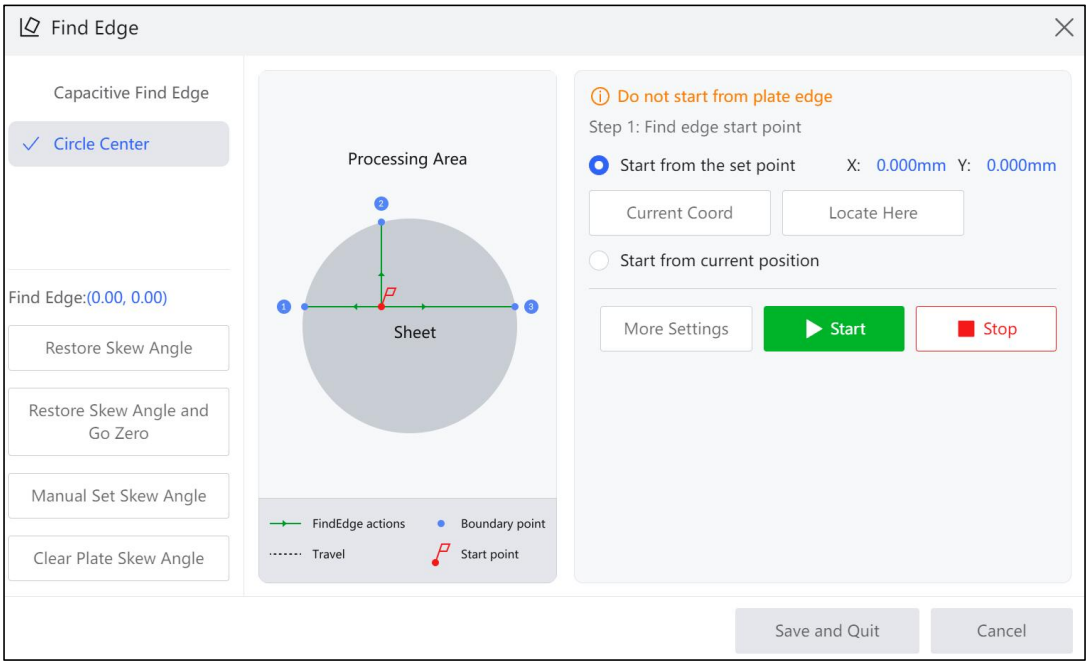


Figure 6-11 Circle circle

## 6.7 Calibrate Capacitance

Calibration establishes the correlation between the capacitive sensor's readings and the actual nozzle-to-plate distance, ensuring precise height control during cutting. In addition, the calibration results provide essential height feedback for key functions, including ***Capacitive Find Edge***, ***Smooth Pierce***, ***Frog Leap***, and ***Short travel no lift***. Application scenarios for this feature include (but are not limited to) the following:

- Initial machine installation and commissioning.
- After cutting head replacement/maintenance.
- After nozzle replacement.
- After the plate material is replaced.

***Manual Calibrate*** and ***Quick Calibrate*** are supported. The procedure is as follows:

**Step 1** Before calibrating, make sure that the nozzle is securely installed and the plate exists to follow below the calibration position.

**Step 2** In the ***Quick Calibrate*** mode, you can select the current position or specified position. Click ***Quick Calibrate***, and the Z-axis will follow to 5 mm away from the material surface by default. In the ***Manual Calibrate*** mode, jog the cutting head close to the plate surface, and then click ***Start Calibrate***.

**Step 3** After the calibration is finished, confirm that the results of ***Stability*** and ***Smoothness*** are excellent. At the same time, the system automatically calculates ***Capacitance range***.

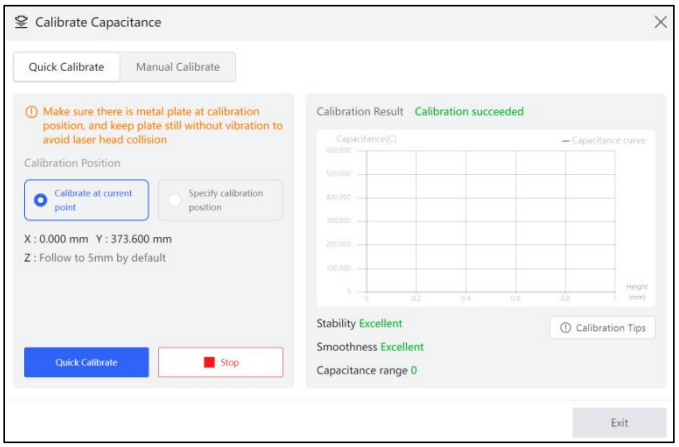


Figure 6-12 Capacitance calibration

## 6.8 Gas Calibration

Only BLT cutting heads supported. This feature fine-tunes the correlation between the DA proportional valve's voltage and the actual gas pressure at the nozzle, leading to more precise gas pressure during processing. Once calibration is successful, the results are automatically saved. Therefore, there's no need to recalibrate when changing nozzles. Before use, verify the gas configuration on the ***Config Tool*** → ***Assist Gas*** page. Then select the gas type on the ***Gas Correction*** page and click ***Quick Gas Correction***.

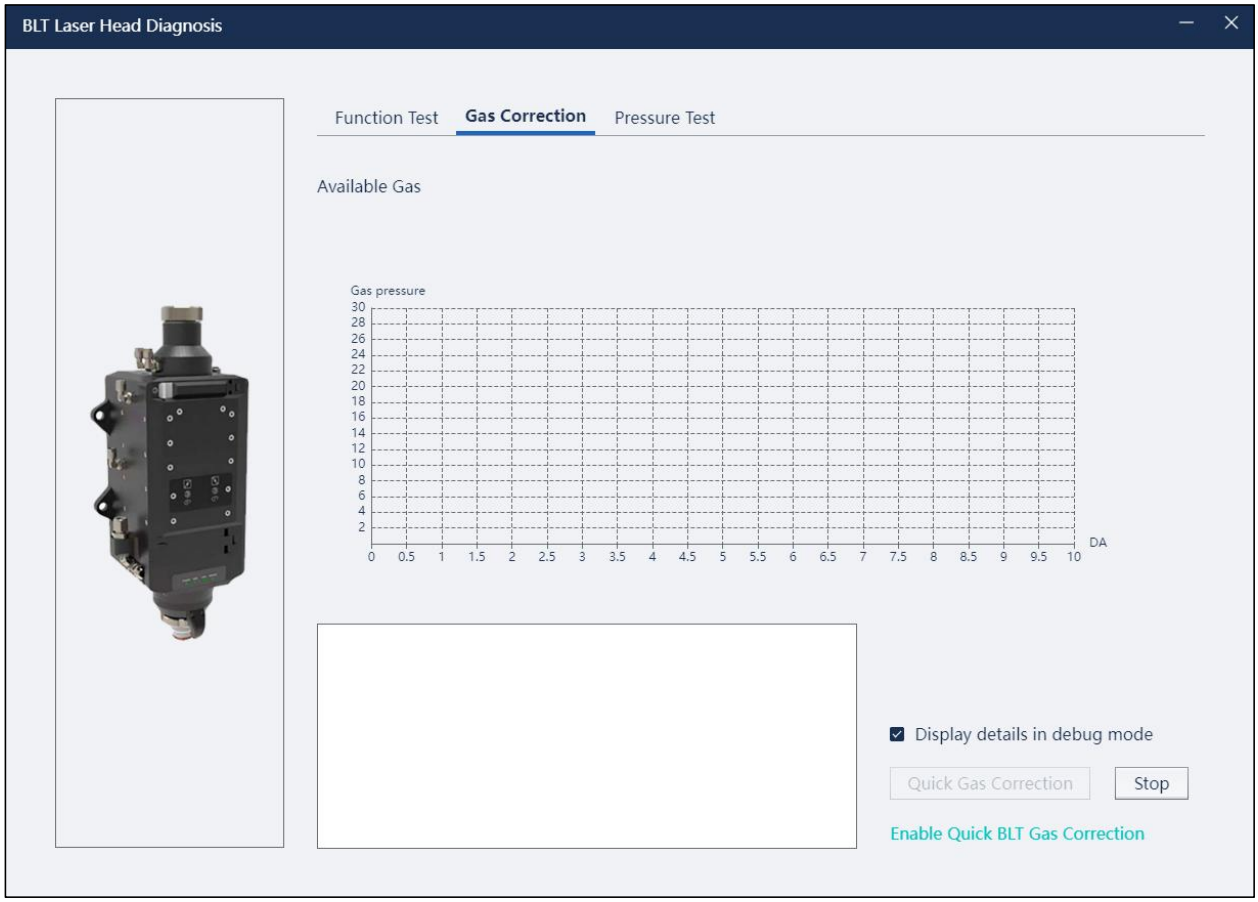


Figure 6-13 Gas calibration

## 6.9 Cut Off

### 6.9.1 Quick CutOff

Mainly used for rapid plate separation along the X-axis or Y-axis direction. Navigate to ***Toolbox*** → ***Cut Off***, configure the relevant parameters, and then press ***Start*** to initiate cutting. The cutoff line defaults to the ***Large Contour*** layer parameter.

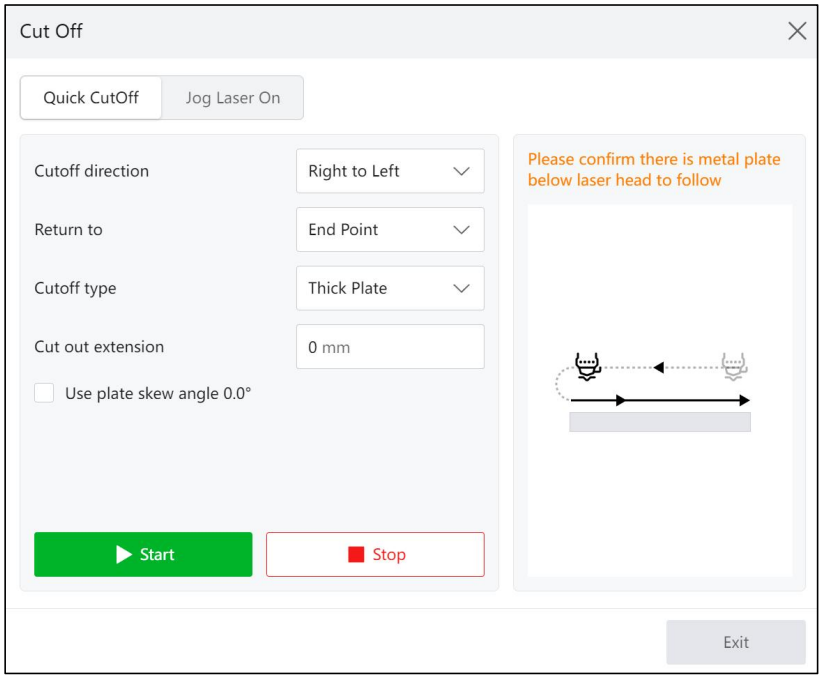


Figure 6-14 Quick cutoff

- Cutoff direction: Defines motion axis for separation, including right-to-left, left-to-right, top-to-bottom, and bottom-to-top.
- Return to: Sets the return position of the cutting head after completion.
- Cutoff type: Determines thin or thick plate according to the actual plate thickness on the ***Technique*** page.
- Cut out extension: Mainly for the case where the plate section is not perpendicular. Ensures complete separation by extending the cut beyond the plate edge. The value range is from 0 mm to 20 mm.
- Use plate skew angle 0.0°: When enabled, the system applies the angle determined by edge-finding for the cutoff motion, helping to minimize material waste.

### 6.9.2 Jog Laser On

When ***Jog Laser On*** is enabled, the laser and gas will be activated during the jog, allowing cutting off the plate. By default, the ***Large Contour*** layer parameter is used for cutoff. You can adjust it via ***Technique***.

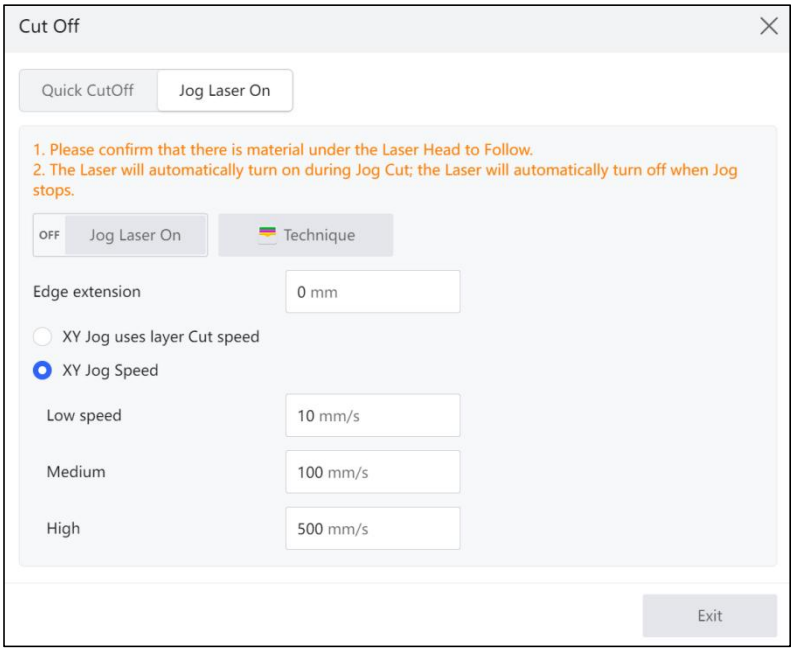


Figure 6-15 Jog laser on

- Edge extension: Defines the extra cutting length after detecting the edge during jog cutting.
- XY Jog uses layer Cut speed: When selected, the X/Y axis jog speed directly applies the cutting speed from the ***Large Contour*** layer. If individual settings are required, enable ***XY Jog Speed*** and separately configure the jog values for the X/Y axis under low, medium, and high speed modes, enabling more precise control of the jog cutting.

## 6.10 Border Contour

Generates one or more border contours around the maximum outer contour of the part. Two functions are provided: ***Create Border Contour*** and ***Clear border contour***.

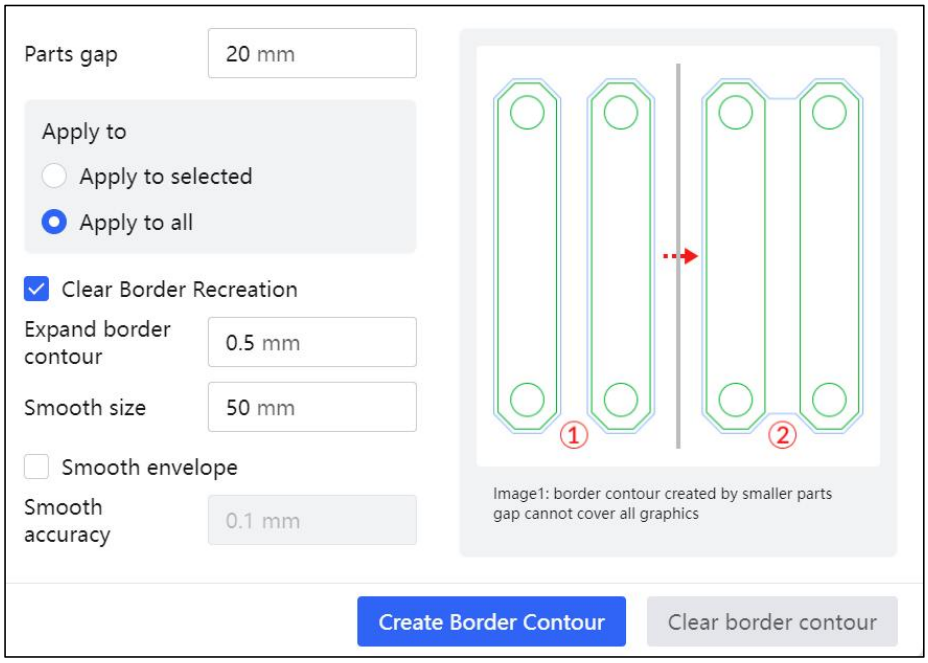


Figure 6-16 Create border contour

- Parts gap: Creates an outer border contour based on the part geometry. The larger the ***Parts gap*** between parts, the larger the area included in the border contour.
- Expand border contour: A smaller value results in a tighter expansion around the parts.
- Smooth size: The smaller the value, the closer the border contour fits to the parts.
- Smooth envelope: When enabled, automatically smooths irregular border contour curves. Requires setting the ***Smooth accuracy***.

## 6.11 Auto Center

Only BLT-MA series cutting heads supported.

**Step 1** The switching gas interface and the nozzle cooling gas interface should be connected via a three-way valve or configured with a single-line gas supply. The intake pressure must be maintained at about 6 bar. Ensure that the gas pressure is stabilized so that it does not affect the calibration results during auto center.

**Step 2** Remove the nozzle and install the nozzle calibration tool. Then, activate the light source of the calibration tool.

Figure 6-17 Install the nozzle calibration tool

**Step 3** Navigate to ***BLT Laser Head Diagnosis*** → ***Advanced Config***, check ***Enable Real-Time Auto-alignment***, and select the real-time alignment scenario as required.

**Step 4** Open the ***Auto Center*** page. Click ***Quick Center***, and the system will automatically perform nozzle light source calibration and auto-centering. The initial calibration may take longer. With ***Quick Center***, the system can complete the centering for the two beam modes at once. A prompt "Calibrated" appears when all the operations are finished.

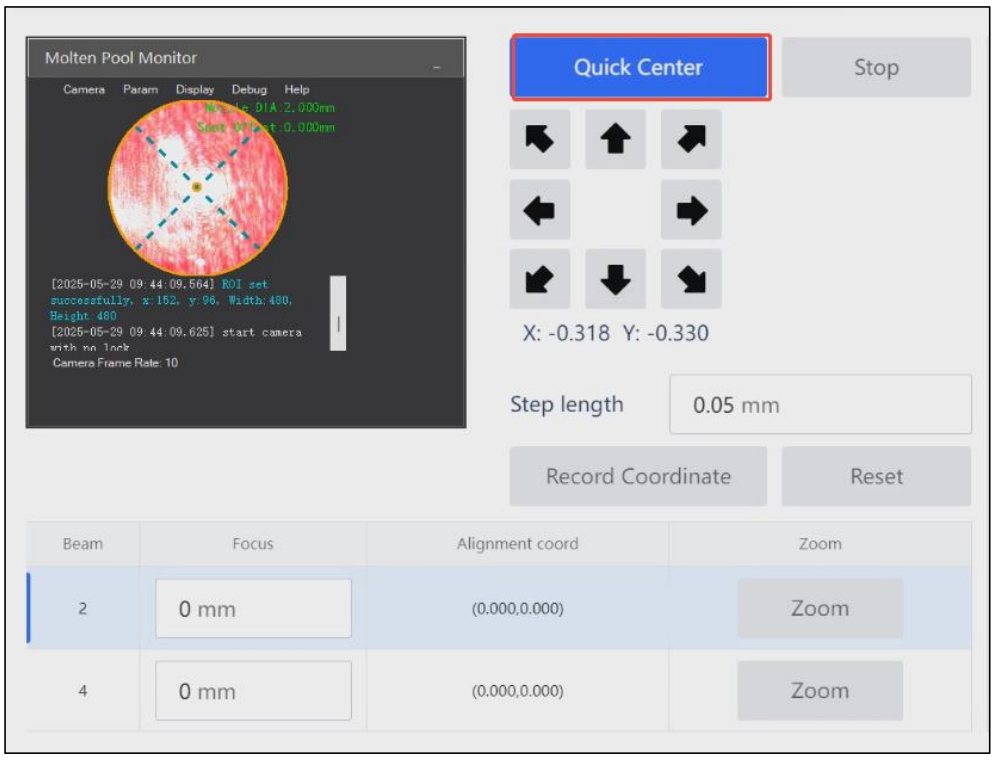


Figure 6-18 Perform quick center

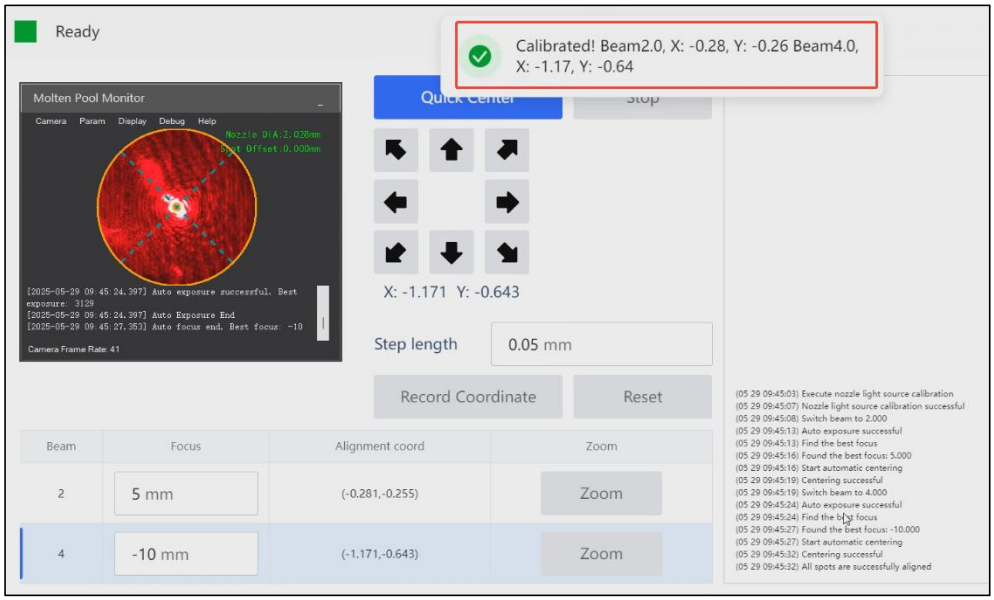


Figure 6-19 Calibrated

# Chapter 7 AR Production

AR Production is a highlight feature of HypCutRevo, combining multi-camera vision fusion and AI deep learning algorithms. This advanced image recognition technology enables fully automated "what-you-see-is-what-you-cut" (WYSIWYC) processing, significantly improving efficiency. Key applications include auto production, quick cutoff, and remnant reuse.

Compared to conventional workflow, AR production eliminates ***Find Edge*** and ***Frame***, effectively reducing machining preparation time. AR Production is an optional feature—compatibility varies by HypCutRevo configuration. Confirm support status with the equipment manufacturer. The following conditions must be met simultaneously before use:

- The camera is mounted and connected. Ensure the camera calibration is performed successfully.
- The dongle is plugged into the HyPanel2 EtherCAT CNC host.
- The vision host has been properly connected to HypPanel2 where HypCutRevo is installed via the network cable. The vision host is in the power-on operation state.
- No personnel within the machine working area.

## 7.1 Automation Production

The key workflow steps include: Capture Plate Image, Complete Machine Tool Matching, Select Target Task, Auto Match and Start.


Figure 7-1 Automated production workflow

**Step 1** Click ***AR*** in the upper right corner of the interface, and the machine tool starts to move, driving the camera to capture a full plate picture of the machine working area. The system automatically performs AR visual matching.

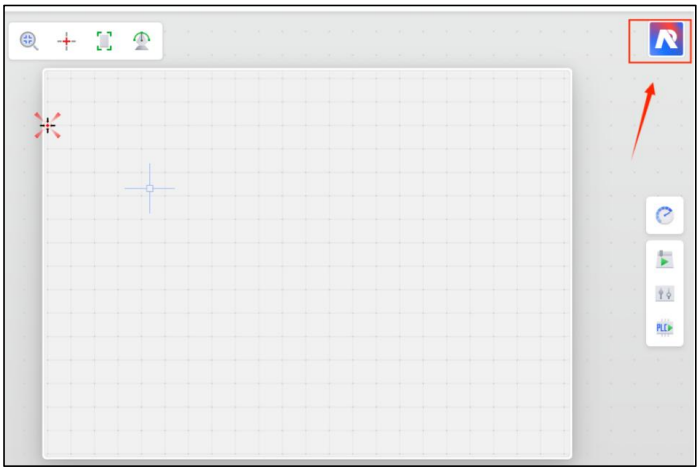

Figure 7-2 AR access

**Step 2** Once the machine tool matching is complete, the captured plate image appears centrally in the software. If the plate image does not meet the requirements or the plate position shifts in the image, you can retake the picture.

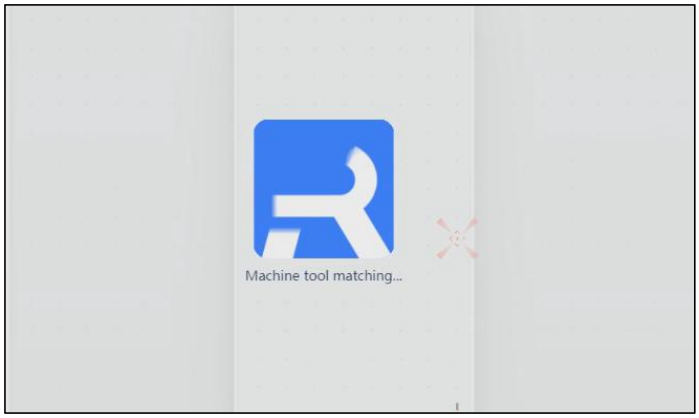


Figure 7-3 Machine tool matching

**Step 3** Select the target task in the list. In single-plate mode, the software will automatically match the selected drawing to the plate. If more than one plate exists on the machine tool, you need to manually draw selection boxes for each processing area.

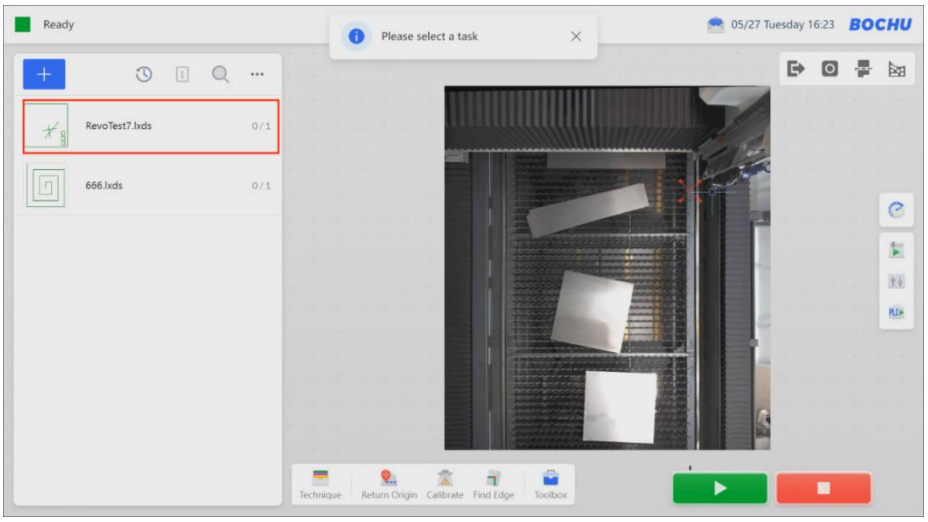


Figure 7-4 Select target task

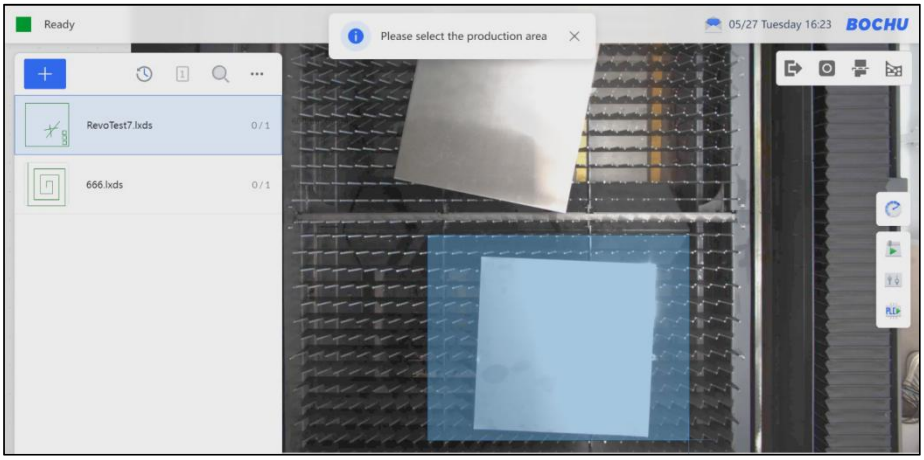


Figure 7-5 Select processing area

**Step 4** Check and verify that the drawings on the plate meet the machining requirements. After confirming the technique, press ***Start*** to initiate cutting.


Figure 7-6 Successful matching of tasks to plates

## 7.2 Quick Cutoff

The key workflow steps include Capture Plate Image, Complete Machine Tool Matching, Enter Plate Thickness, Draw Cutoff Line, Set Cutoff Parameters, and Start .

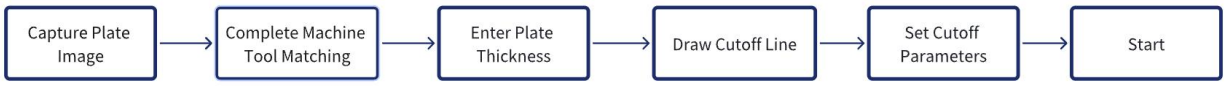


Figure 7-7 Cutoff workflow

**Step 1** Click on the cutoff icon, and choose whether to capture a new plate image. Input exact material thickness (critical for visual matching accuracy)

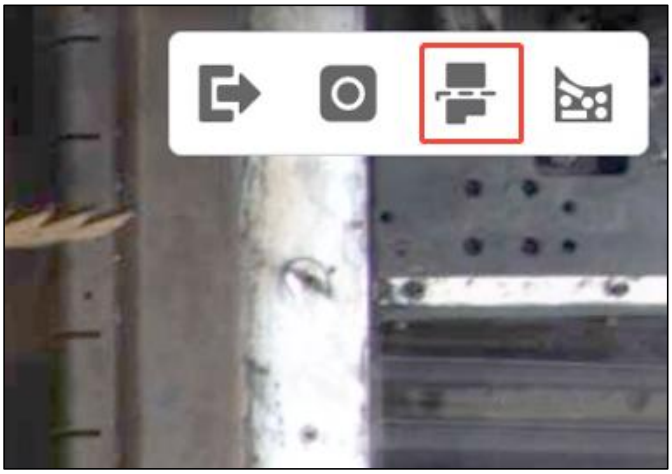

Figure 7-8 Enter cutoff mode

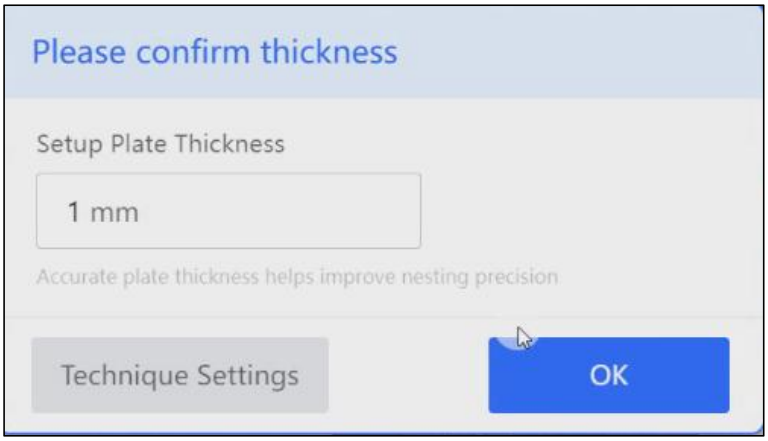


Figure 7-9 Input plate thickness

**Step 2** Draw cutoff lines. Manually draw straight lines or polylines on the captured plate image. Confirmed lines appear as yellow with a blade icon. Supports redrawing and deleting during the drawing process.

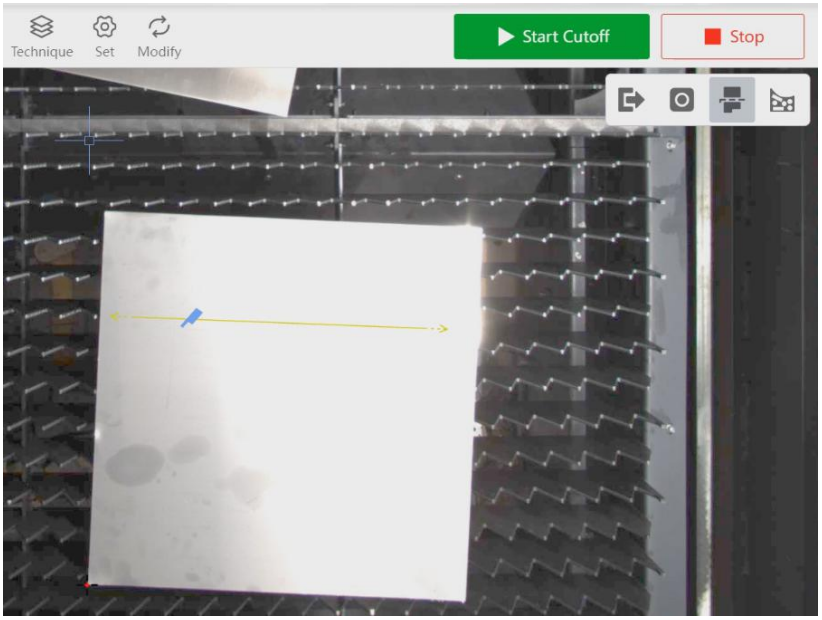


Figure 7-10 Draw the cutoff line

**Step 3** Set the cutoff parameters.

- Cut Type: Determines thin or thick plate according to the actual plate thickness.
- Extension: Ensures complete separation by extending the cut beyond the plate edge.
- Return point: Sets the return position of the cutting head after completion.

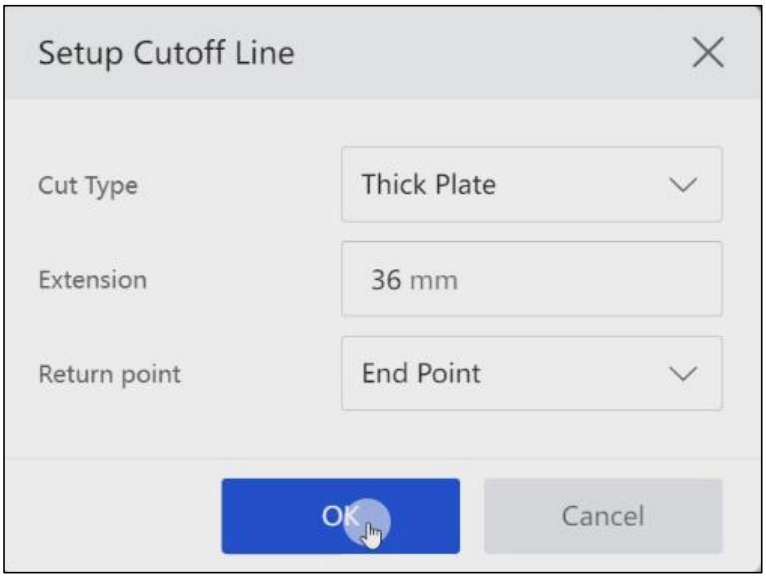


Figure 7-11 Set the cutoff parameters

**Step 4** Confirm the technique. The cutoff line defaults to the ***Large Contour*** layer parameter. Press ***Start*** to initiate cutting.

## 7.3 Remnant Reuse

The key workflow steps include Capture Plate Image, Complete Machine Tool Matching, Enter Plate Thickness, Select Part and Nesting Area, Auto Nest, Start.

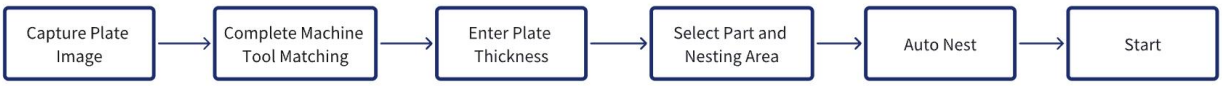


Figure 7-12 Remnant reuse

**Step 1** Click the remnant reuse icon, choose whether to capture a new remnant image, and enter plate thickness.

**Step 2** In the remnant reuse mode, the task list automatically switches to part mode. Select target parts from the task list.

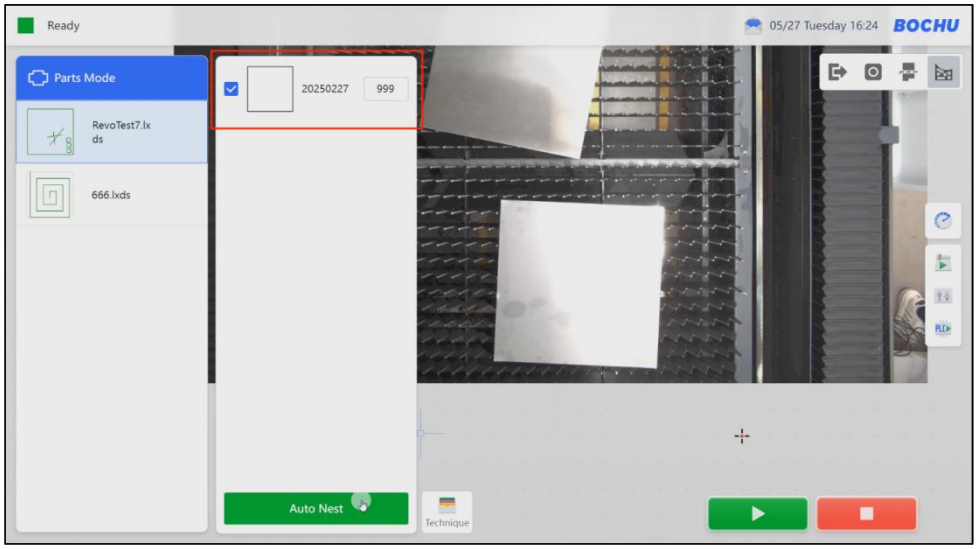


Figure 7-13 Select target parts

**Step 3** Click ***Auto Nest***. Left-click and drag to define a rectangular nesting area. The blue area overlapping the plate indicates the valid nesting area.

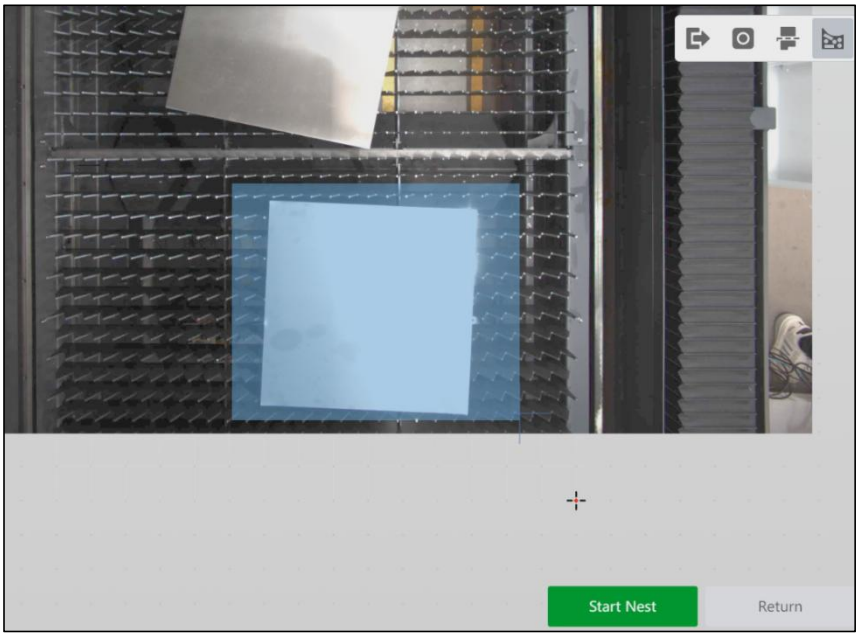


Figure 7-14 Define the nesting area

**Step 4** Click ***Start Nest*** for part nesting and sorting. After nesting, press ***Start*** to initiate cutting.

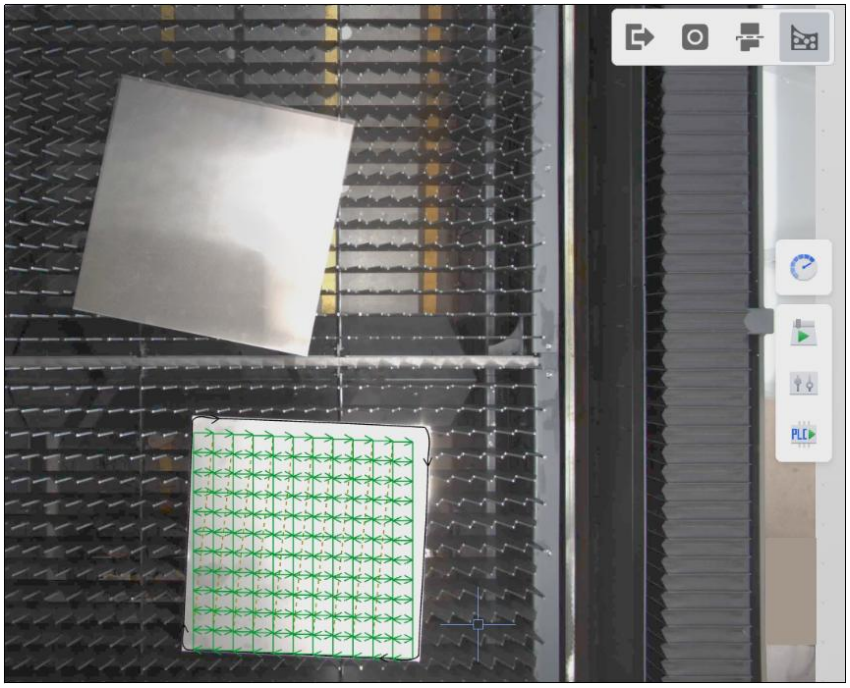

Figure 7-15 Auto nesting result

# Chapter 8 Debug Mode

The ***Debug Mode*** is mainly used for rapid prototyping and technique tuning. You can either create a new base drawing or import a local drawing file for debugging. Alternatively, the built-in drawing tools can be used to directly create geometric shapes, which is convenient for temporary production or sample testing.

When drawing or modifying graphics, it is recommended to enable ***Focus Mode*** to enlarge the drawing display area and reduce interface distractions. For operations related to graphics, refer to Graphic Operations. After modification, drawings can be saved locally in *.lxds or *.dwg format for future use.

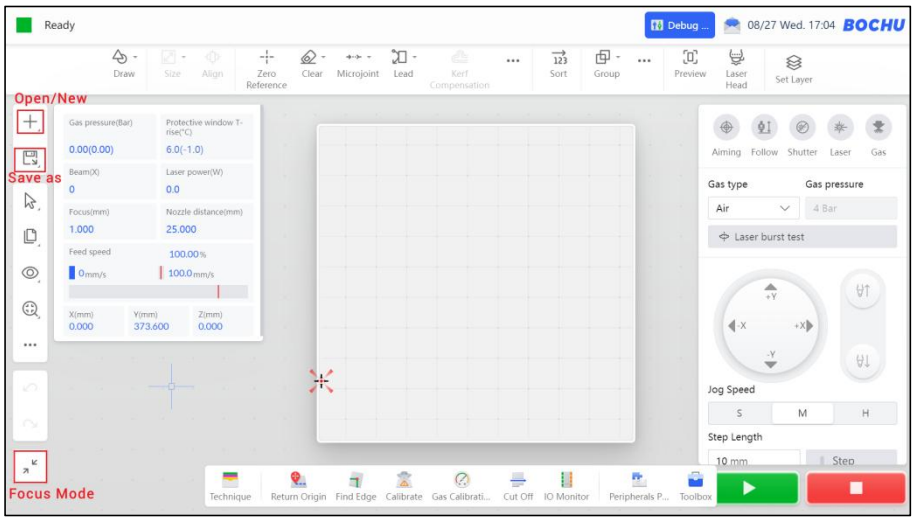


Figure 8-1 Debug interface

## 8.1 Laser Head Data (Only for BLT Cutting Heads)

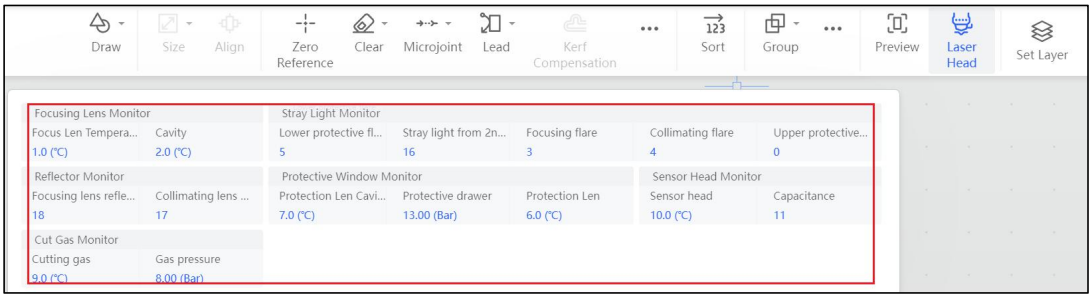


Figure 8-2 Laser head data

- Focusing Lens Monitor: Displays the temperature of focusing lens and cavity.
- Stray Light Monitor: Displays the stray light of the lower protective windows, focusing lens,

and collimating lens.

- Reflector Monitor: Displays the reflected stray light of the focusing lens, and collimating lens.
- Protective Window Monitor: Displays the protective window cavity temperature, protective window temperature, and protective drawer pressure.
- Sensor Head Monitor: Displays the sensor head temperature and capacitance value.
- Cut Gas Monitor: Displays cut gas temperature and gas pressure.

## 8.2 Technique Library

The technique data uploaded or imported can be centrally managed on this page.

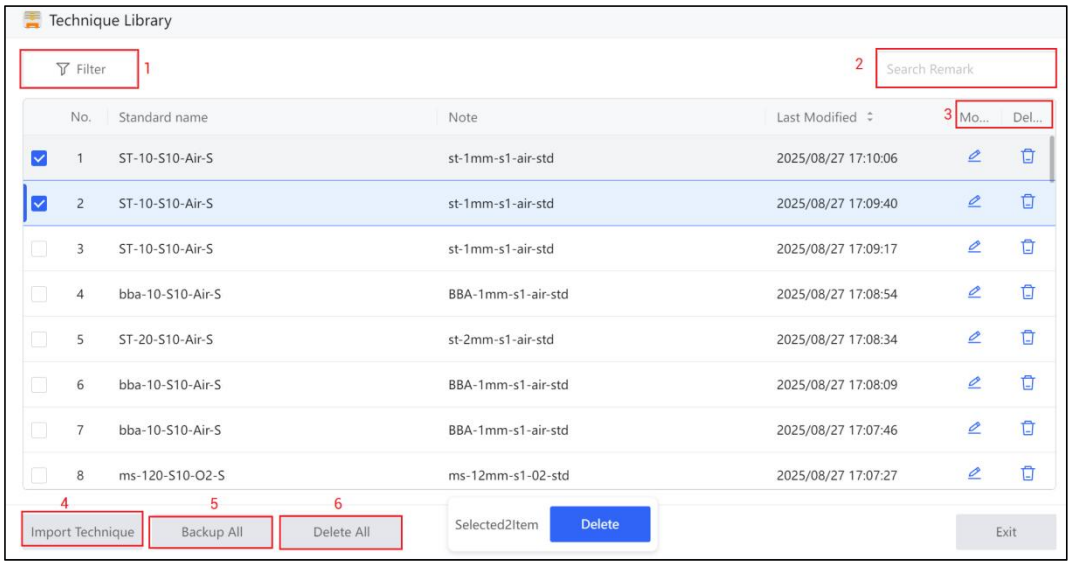


Figure 8-3 Technique library

The main operations are described below:

**Table 8-1 Main Operations in the Technique Library**

| No. | Name | Description |
|---|---|---|
| 1 | Filter | Quickly filter the applicable technique based on ***Material***, ***Thickness***, ***Gas***, **Nozzle**, ***Power***, and ***Laser head***. |
| 2 | Search | Enter keywords to filter technique results. |
| 3 | Operation Bar | • Modify: Adjusts machining parameters as needed; the custom name can be modified. After modification, the last edited time will be refreshed.<br>• Delete: Deletes the technique entry in the corresponding row. |

| No. | Name | Description |
|---|---|---|
| 4 | Import Technique | Imports the technique files (*.db) from the local. When importing duplicate technique, you can choose to skip or overwrite. |
| 5 | Backup All | Save all process files to local storage. |
| 6 | Delete All | Delete all data in the technique library. |

## 8.3 Focus Gauge

Used to measure the actual focus position corresponding to the zero focus of the cutting head. The procedure is as follows:

**Step 1** Select the beam diameter to be tested. Then set the focus parameters and line cut parameters. Click ***Create Drawing*** to generate the drawing in the CAD area.

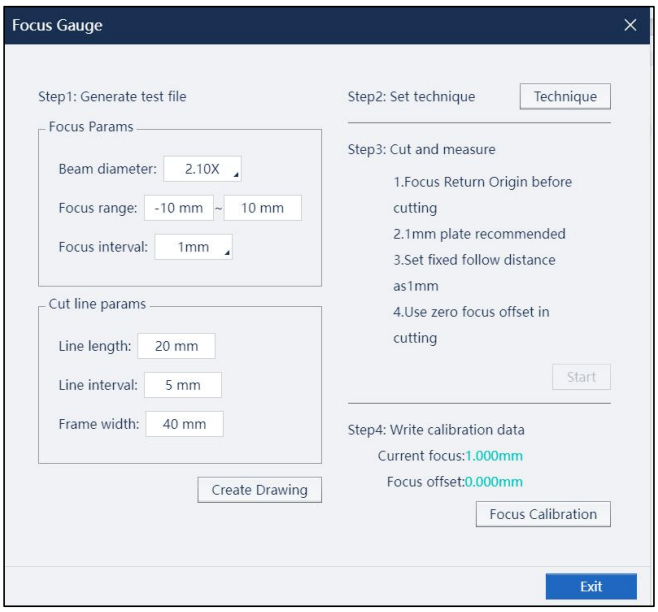


Figure 8-4 Generate test drawing

**Step 2** Confirm the drawing, then click ***Technique*** to modify machining parameters such as gas type and cut speed.

**Step 3** Cut and measure.

1. Perform ***Focus Return Origin*** before cutting.
2. It is recommended to use a sheet (about 1 mm) and set ***Follow distance*** to 1 mm
3. Use zero focus offset in cutting. Press ***Start*** to initiate cutting.

**Step 4** Based on the test cut, analyze the cutting effect of different focal points, identify the thinnest cut, and enter the value on the ***Focus Calibration*** page. For example, if the kerf at focus 3 is the thinnest, enter 3 at ***Focus value to thinnest kerf***.

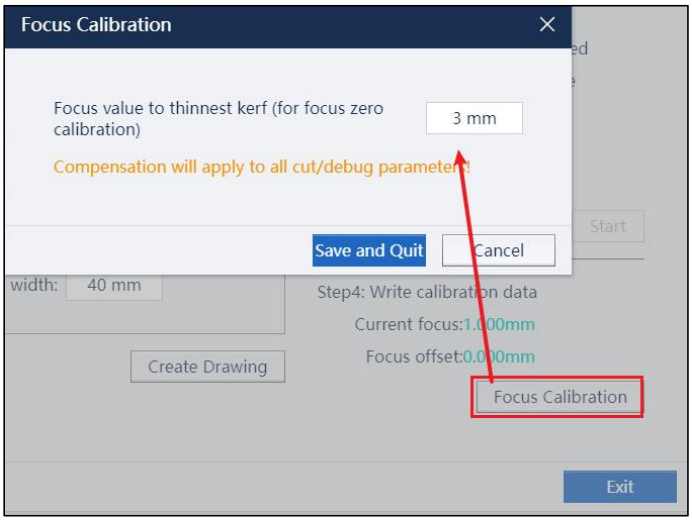


Figure 8-5 Enter the focus calibration value

## 8.4 Optical Alignment

Set the power, burst frequency, duty cycle, beam diameter, and focus for the burst test. Click ***Adjust Focus***, and the cutting head will automatically perform focusing. Each click of **+** or **-** changes the focal position by 0.1 mm.

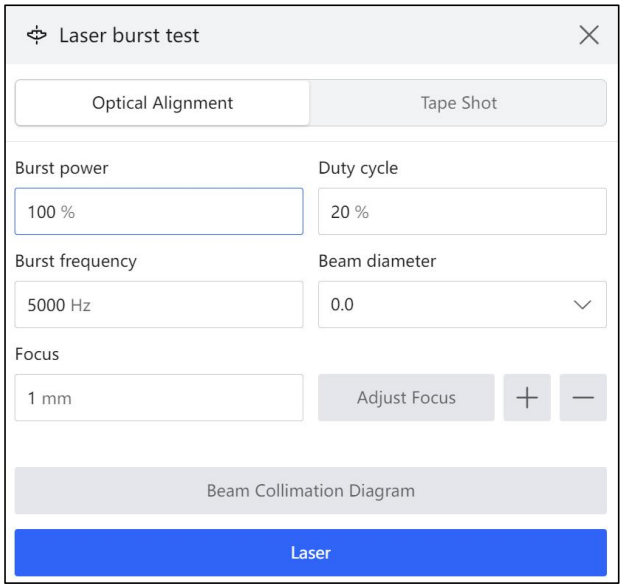


Figure 8-6 Optical alignment

➢ Beam Collimation Diagram:

■ BLT Cutting Head: Clicking will directly display the software's built-in alignment

diagram.

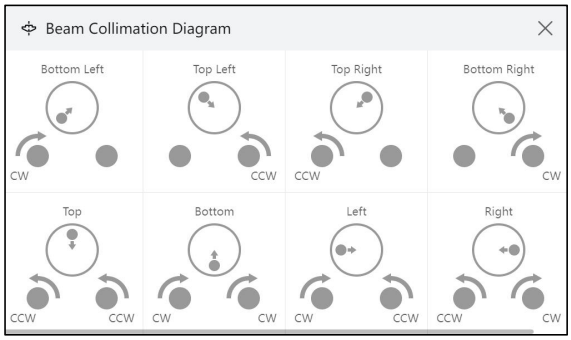


Figure 8-7 Beam collimation diagram

- Non-BLT Cutting Head: You must first import the corresponding alignment diagram from the local via ***Config Tool*** → ***Laser Head*** before using this function.

## 8.5 Tape Shot

Used to test for lens/window contamination in the optical path. The procedure is as follows:

**Step 1** Place the tape beneath the nozzle.

**Step 2** Set the burst parameters, including ***Burst power***, ***Duty cycle***, ***Frequency***, and ***Duration***.

**Step 3** Click ***Laser*** to perform tape shot.

**Step 4** After the test, check the spot on the tape for any contamination. If contamination is present, additional tests will be required to determine the contamination source.

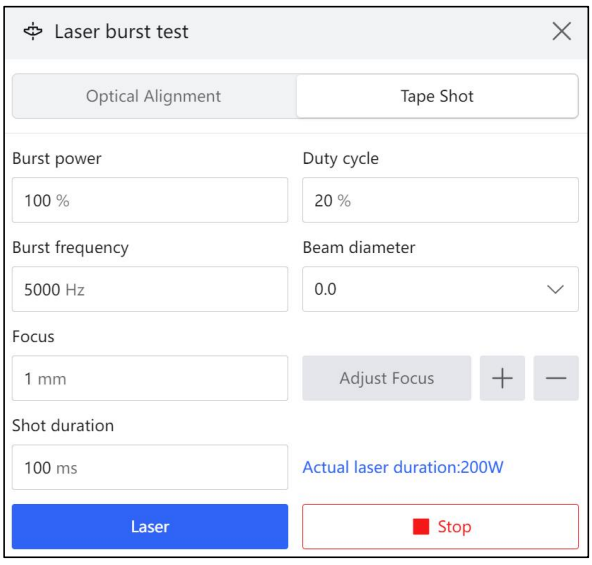


Figure 8-8 Tape shot

## 8.6 IO Monitor

The ***IO Expansion*** page displays real-time input/output status during cutting, helping diagnose potential I/O-related issues.

Enable the ***Debug*** mode and select the current board number. You can perform operations including: output on/off switching, input/output validity check, input simulation tests, PWM debugging, and DA debugging. Limit signals indicate whether the cutting head triggers a limit switch; PWM signals reflect the laser On/Off status.

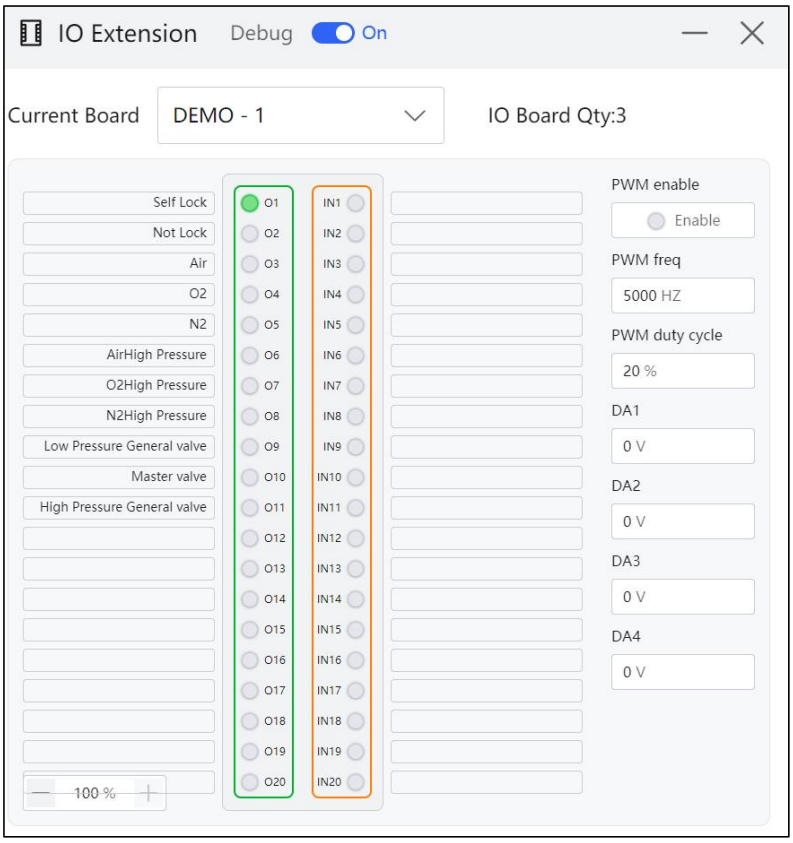


Figure 8-9 IO monitor

## 8.7 BLT Laser Head Diagnosis

For BLT series cutting heads, this function provides real-time sensor monitoring, focus motor test, speed curve record, and more.

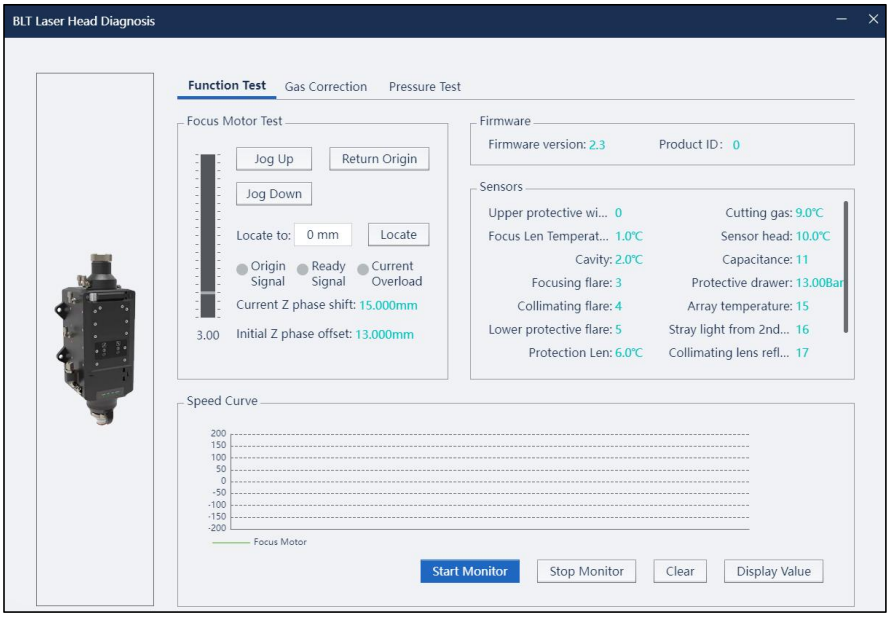


Figure 8-10 BLT laser head diagnosis

## 8.8 Curve Monitor

Mainly used to monitor and view abnormalities in the machine for debugging or troubleshooting.

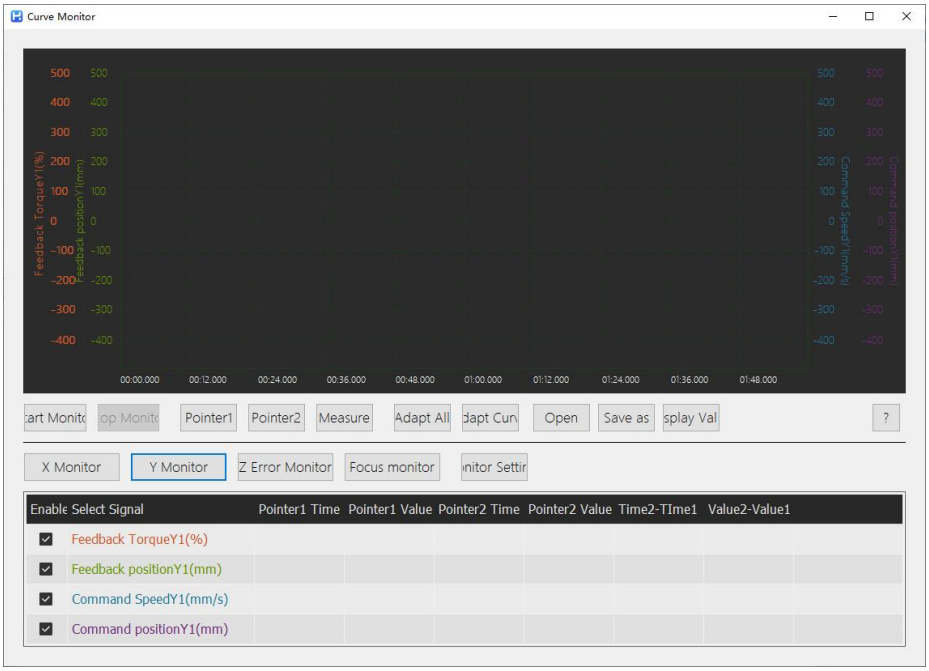


Figure 8-11 Curve monitor

## 8.9 Nozzle Diameter Setting

Enter the ***Nozzle diameter*** value and confirm by clicking ***Manual Set Diameter***. On the ***Molten Pool Monitor*** screen, the yellow circle indicates the size of the nozzle diameter.

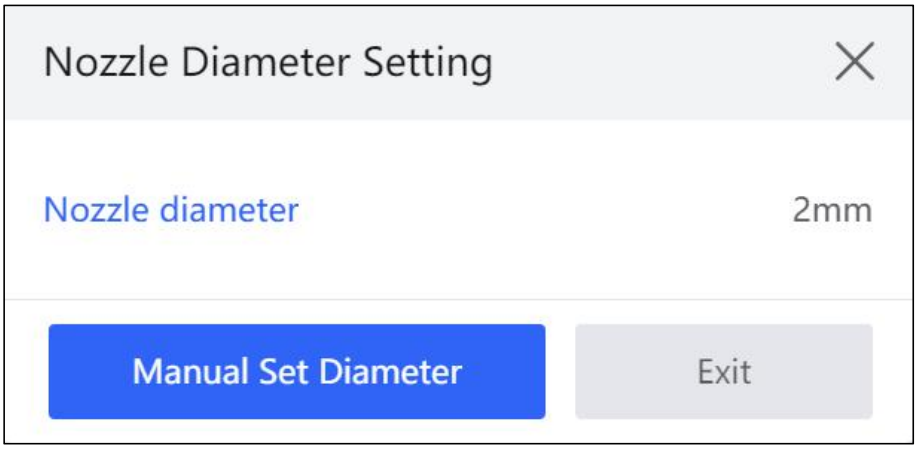


Figure 8-12 Nozzle diameter setting

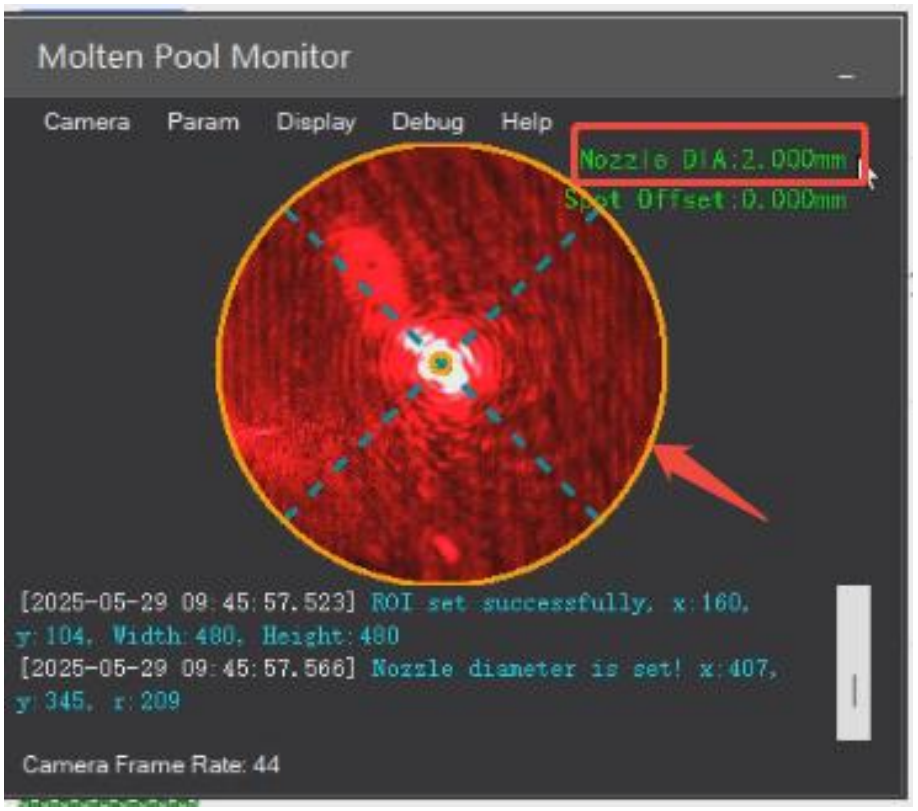


Figure 8-13 Setting effect

## 8.10 Nozzle Light Source Calibration

Performs optical alignment verification of the nozzle light source after installation. Before calibrating, confirm the laser shutter and aiming is closed. Place the calibration light source under the nozzle and power it on.

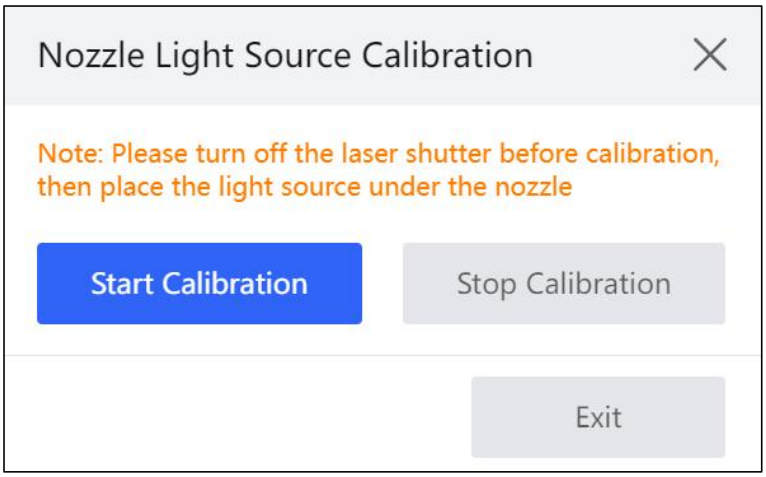


Figure 8-14 Nozzle light source calibration

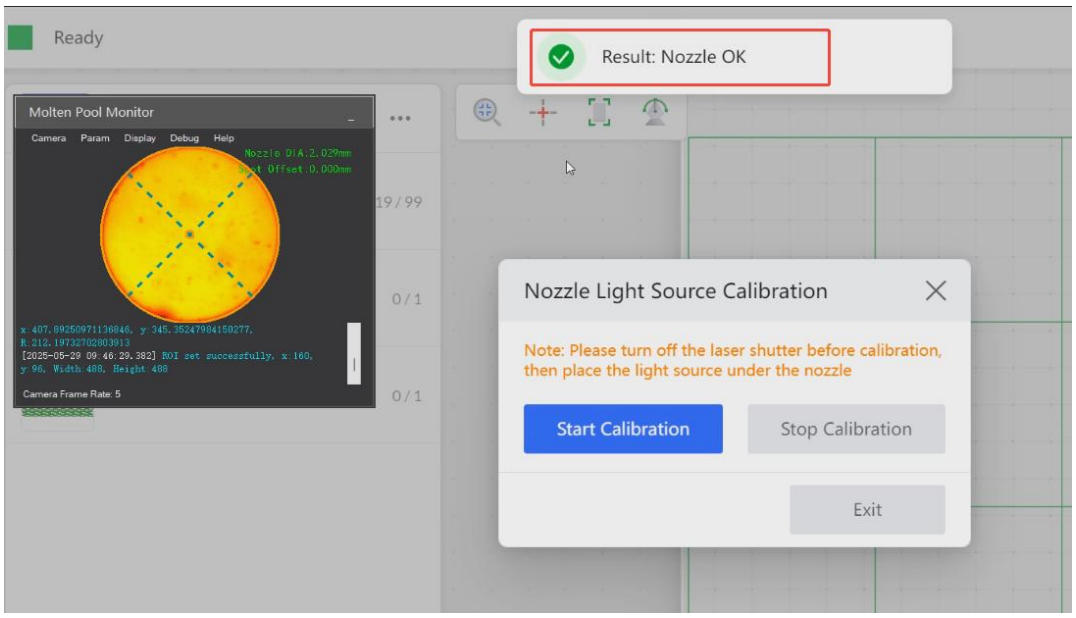


Figure 8-15 Calibration results

## 8.11 Moltenpool Parameters

This module enables real-time optimization of molten pool cutting parameters through closed-loop monitoring (exclusive to BLT-MA series cutting heads).

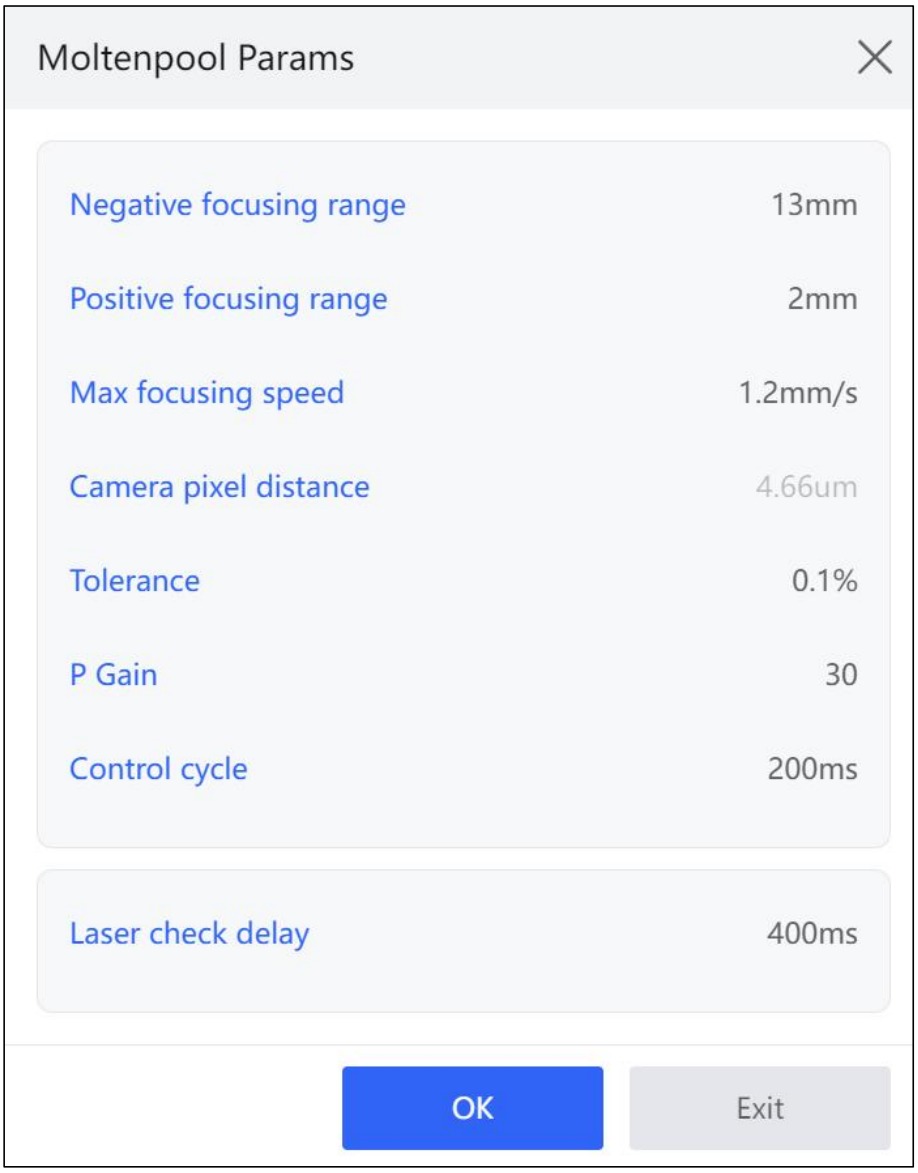


Figure 8-16 Moltenpool parameters

# Chapter 9 Maintenance

In the Bottom Function Bar, the ***Toolbox*** includes functions related to installation diagnostics, assisting in debugging and troubleshooting, as well as certain maintenance functions. Some functions require advanced permissions.

## 9.1 Peripherals Panel

The ***Peripherals Panel*** provides three types of extended functions: ***Self-Lock***, ***Contact***, and ***PLC***.

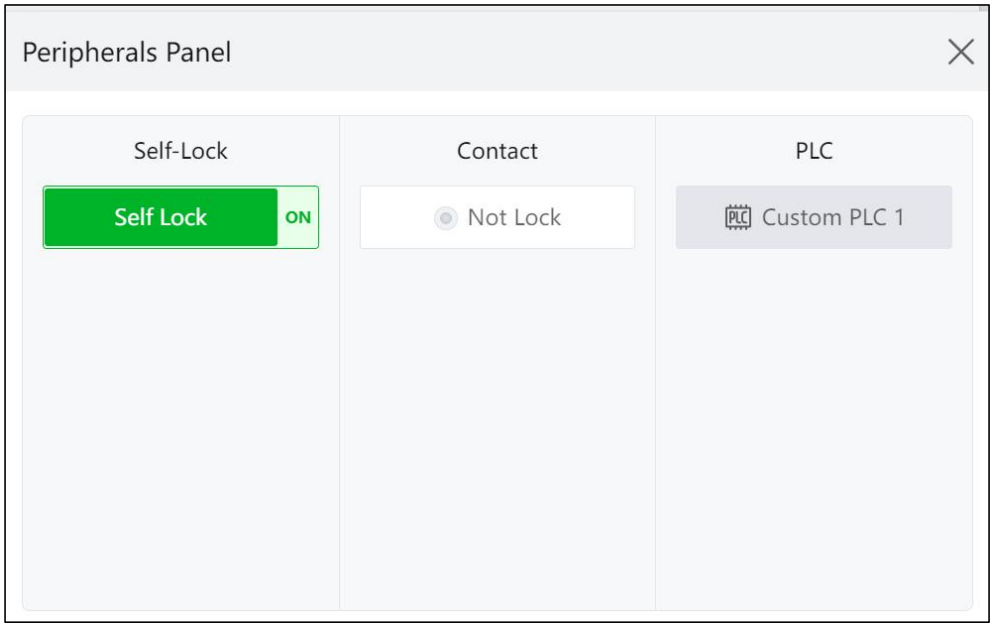


Figure 9-1 Peripherals panel

- Self-Lock: Requires prior configuration of a custom output via ***Config Tool*** → ***General Output***. Once configured, the corresponding self-lock function will be displayed under the ***Peripherals Panel***, where you can trigger the corresponding output action by clicking the button.
- Contact: After configuring input/output contact signals, you manually trigger the corresponding contact function.
- PLC: Requires writing and saving an automation process in ***Toolbox*** → ***PLC*** beforehand. Once completed, you can manually trigger and execute the PLC process on this page.

## 9.2 PLC

This function allows you to customize execution actions during machining processes. Incorrect PLC modifications may cause equipment damage or safety hazards. Please contact technical support for assistance if necessary.

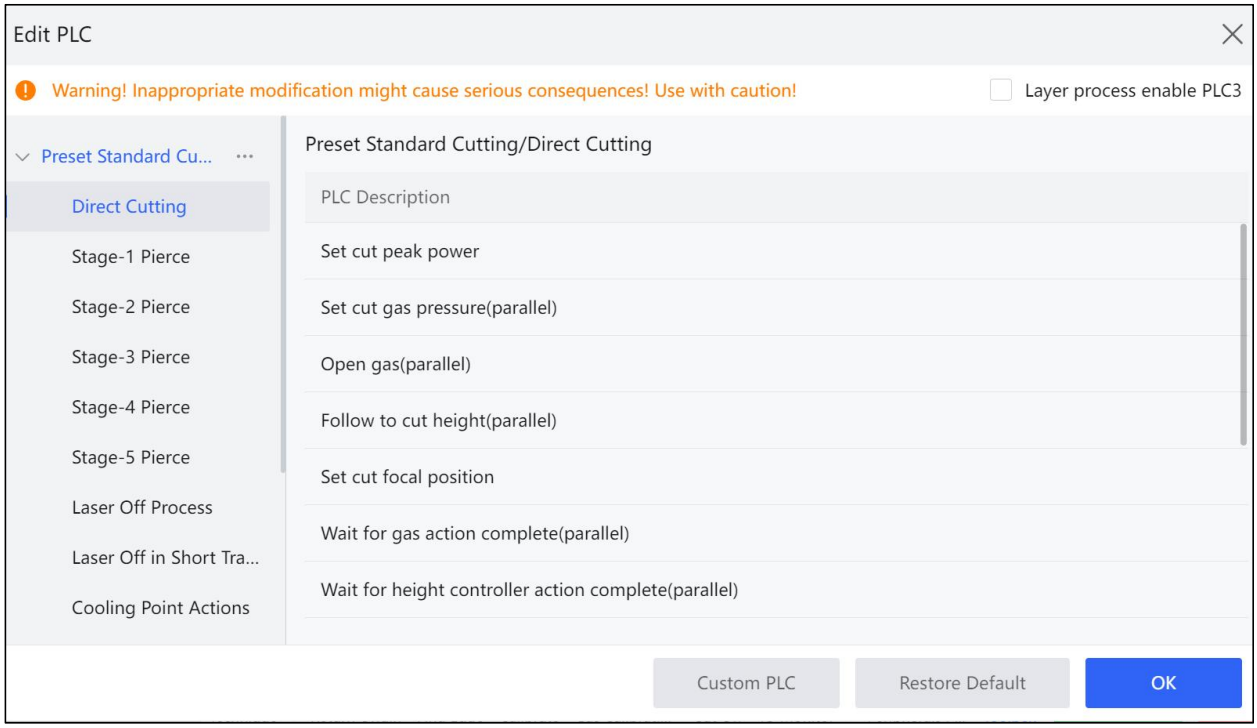


Figure 9-2 PLC

## 9.3 Range Measurement

Measures the physical positions of X/Y-axis positive/negative hard limits relative to the machine origin, then calculates the optimal soft limit range. The procedure is as follows:

**Step 1** Verify that the machine can detect each axis's origin position and limit switches.

**Step 2** Perform ***Return Origin*** first, then click ***Range Measurement***. The machine tool will automatically move to probe the positive/negative limits.

**Step 3** Save the range measurements.

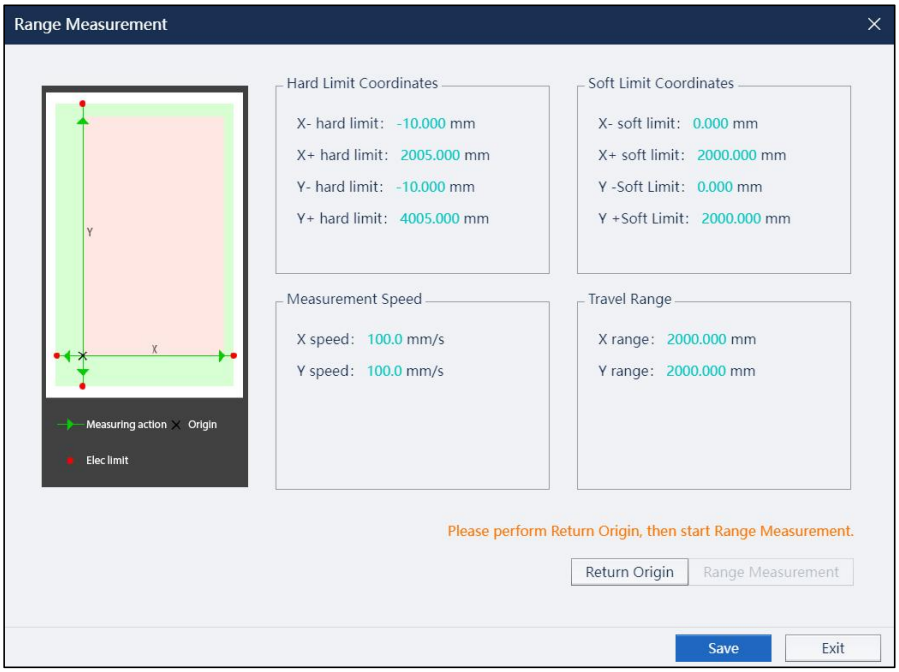


Figure 9-3 Range measurement

## 9.4 Interferometer

Adjusts the optical path accuracy of the X/Y axes using a laser interferometer to enhance processing stability.

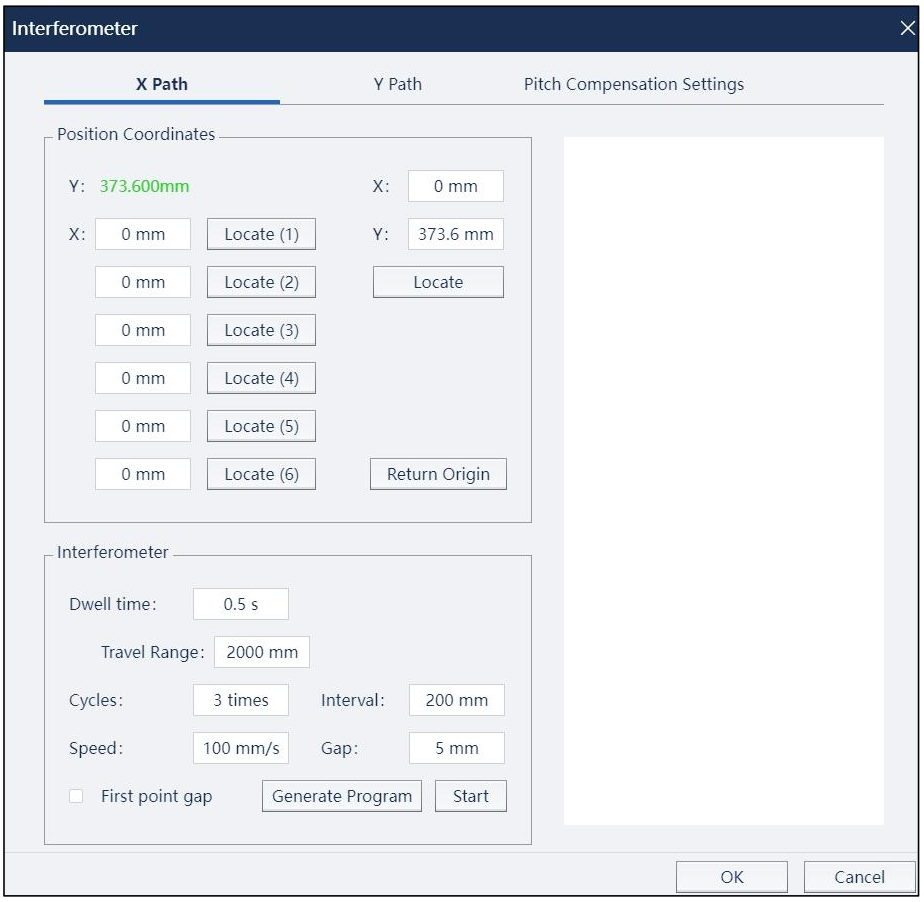


Figure 9-4 Pitch compensation

## 9.5 Ballbar

The ballbar device connects between the cutting head and the machine table. As the cutting head executes a circular interpolation path, the system measures the actual X/Y-axis motion trajectory, compares it against a geometrically standard circle, and finally evaluates the error type and magnitude generated by the machine tool.

Set the parameters on the ***Ballbar*** page, and then click ***Start*** to automatically generate the execution program. With the ballbar device, the system can measure the performance of the machine.

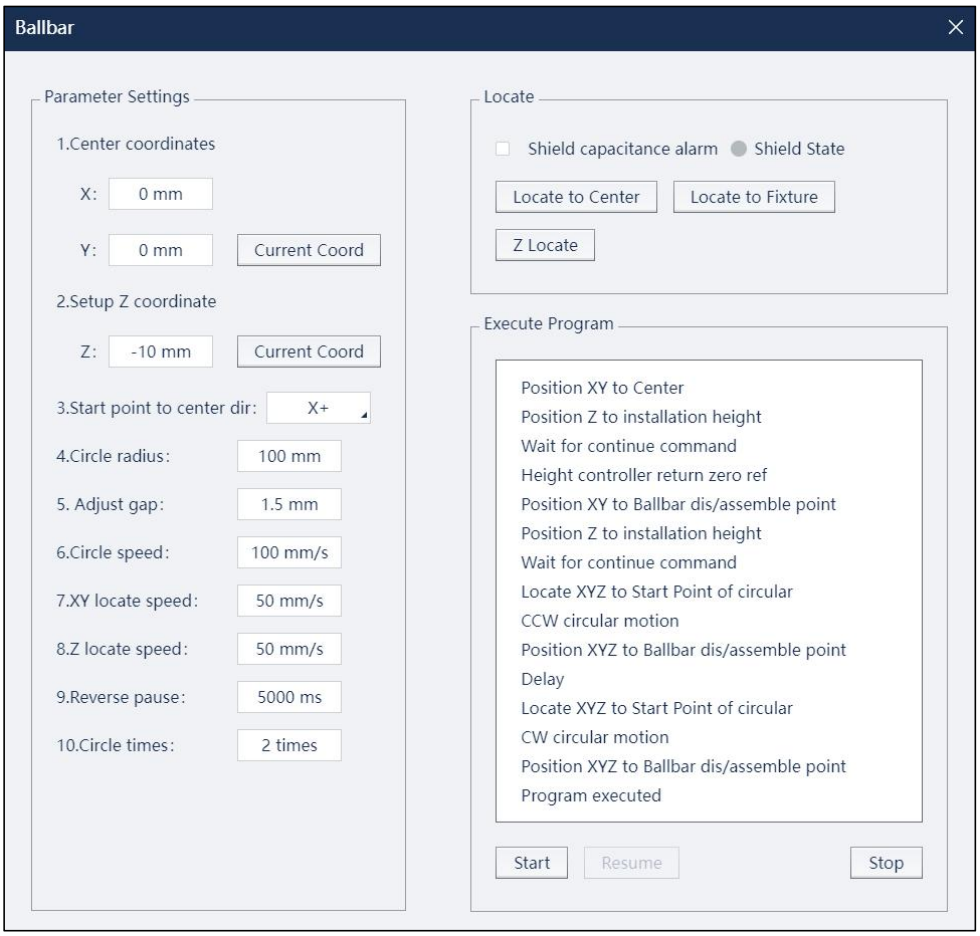


Figure 9-5 Ballbar

## 9.6 Path Error

Analyzes deviations between the commanded path and the actual path generated during multi-axis motion to optimize axis response.

Before debugging, you need to draw a test graphic (typically a circle). Then, click ***Path Error***, and select whether to enable the functions below:

- Collect Command Data: Saves command information during the path error process.
- Collect Production Data: Records machining trajectory feedback during the path error process. If ***Collect Command Data*** is also checked, both command and feedback information are saved during the path error process.
- Monitor Laser Status: Detects whether the laser's on/off state is functioning correctly.
- Locate Folder: Opens the folder where the saved information is stored.

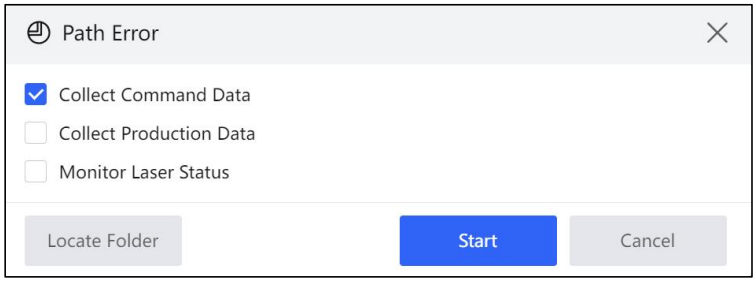


Figure 9-6 Error measurement-related functions

After determining the selection, click ***Start***, and the cutting head will perform ***Dry Run*** along the graphics to be processed. When finished, check the cut circle in the Drawing Display Area. The blue line indicates the servo feedback trajectory, which can be used to adjust the technique parameters required for the actual cutting.

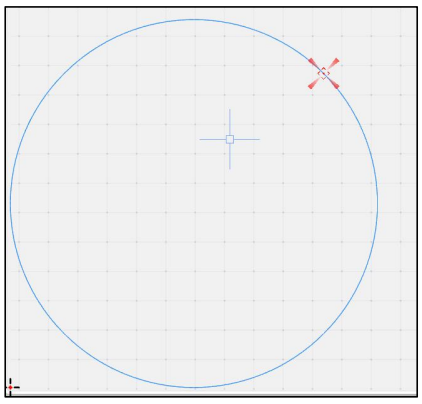

Figure 9-7 Measure error example

## 9.7 Axis Monitor

Used to inspect the axis motion status information, including origin and limit conditions. More servo-related tools are accessible, such as ***Inertia Measurement***, ***Write Servo Params***, ***Measure System Delay***, and ***Driver Optimization***.

The page displays the real-time status for X/Y/Z axes motion control kernel, such as servo alarm, hard limit switch, soft limit switch, origin switch, among others.

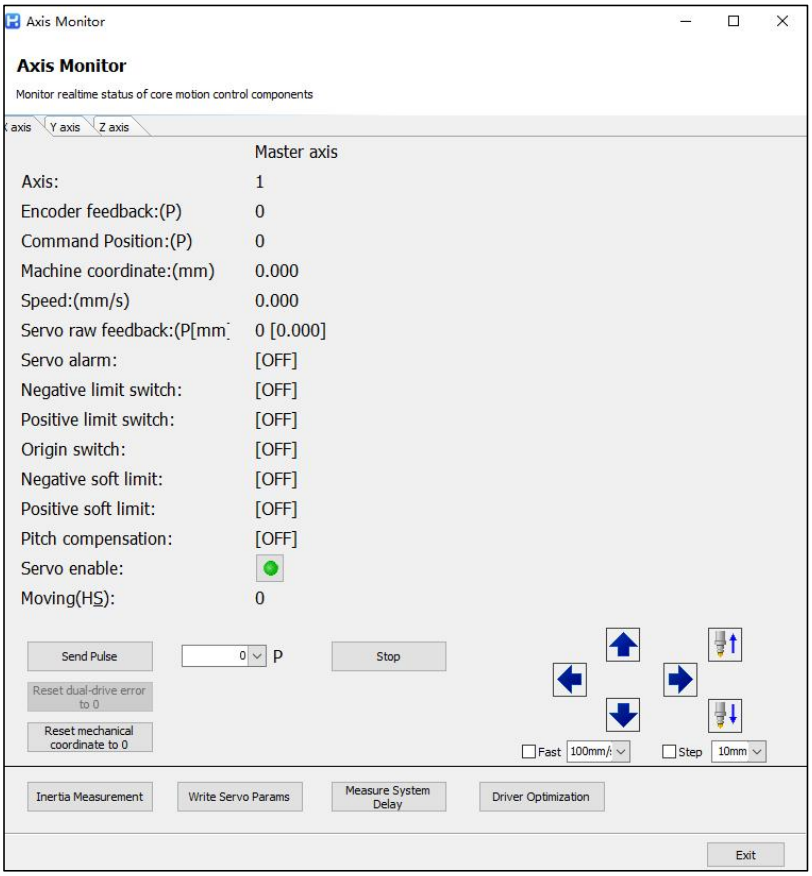


Figure 9-8 Axis monitor

The motion control kernel states are described in the following table.

**Table 9-1 Motion Control Kernel Parameters Description**

| Name | Description |
|---|---|
| Axis | Physically configured axis number (e.g., X1, Y2). |
| Encoder feedback | Real-time servo encoder position feedback (unit: pulses). |
| Command Position | Command position in pulses. |
| Machine coordinate | System-generated machine coordinate position. |
| Speed | Servo's real-time movement speed. |

| Name | Description |
|---|---|
| Servo raw feedback | Records the feedback position of the servo motor. |
| Servo alarm | Active servo alarm. |
| Negative/Positive limit switch | Current negative/positive hard limit switch states. |
| Origin switch | Origin sensor activation state. |
| Negative/Positive soft limit | Current software-defined negative/positive limits. |
| Pitch Compensation | For X/Y-axis only. Detects whether pitch compensation is enabled or not. |
| Servo Enable | Toggle servo power (click to enable/disable). |
| Pulsing | Sends test pulses to the servo when system is idle (for diagnostics). |
| Reset mechanical coordinate to 0 | Resets X/Y/Z machine coordinates to 0. |

## 9.8 Height Controller

Supports data monitoring, capacitance calibration, and diagnosis for the height controller.

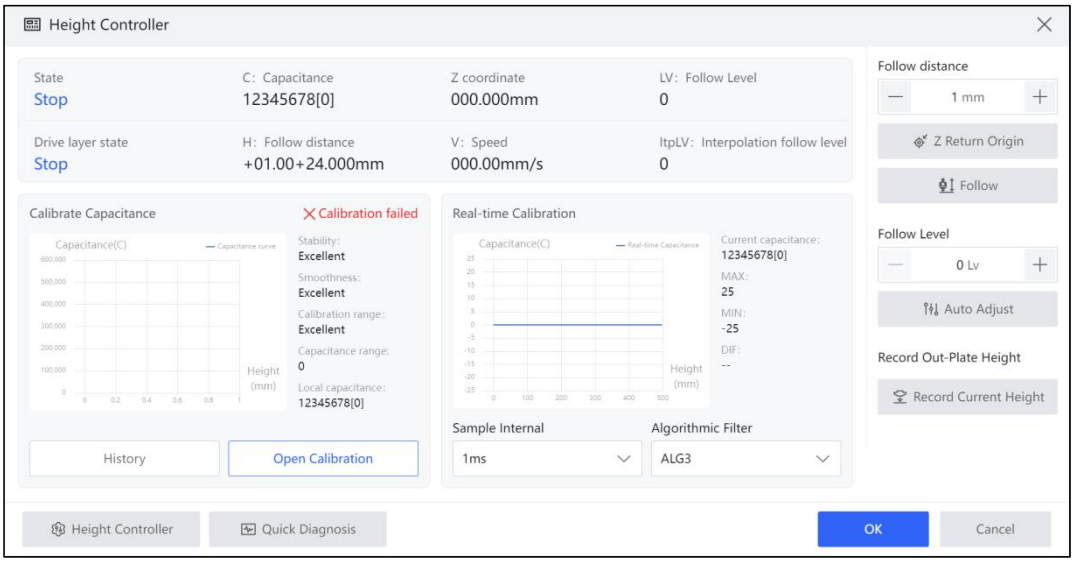


Figure 9-9 Height controller

- Calibrate Capacitance: Supports opening the calibration page to perform capacitance calibration and records all the calibration history results.
- Real-time Calibration: Displays real-time capacitance curve and current capacitance result.

- Follow Control: Adjusts the follow distance and follow level. Follow levels can be set manually or click ***Auto Adjust*** to optimize the level and static torque. Before use, ensure the plate is present under the cutting head.
- Height Controller: Modifies system-specific height controller parameters.
- Quick Diagnosis: Automatically tests the maximum dynamic torque and the capacitance DIF values at different heights.

## 9.9 Cycle Test

Configures parameters for system endurance testing, controlling the ***Dry Run*** for X/Y/Z axes. Included parameters are ***Cycles***, ***Interval***, and ***Z height range***, among others. Once configured, you can perform ***Z Dry Run Test***, ***XY Dry Run Test***, or ***Time-Phase Test***.

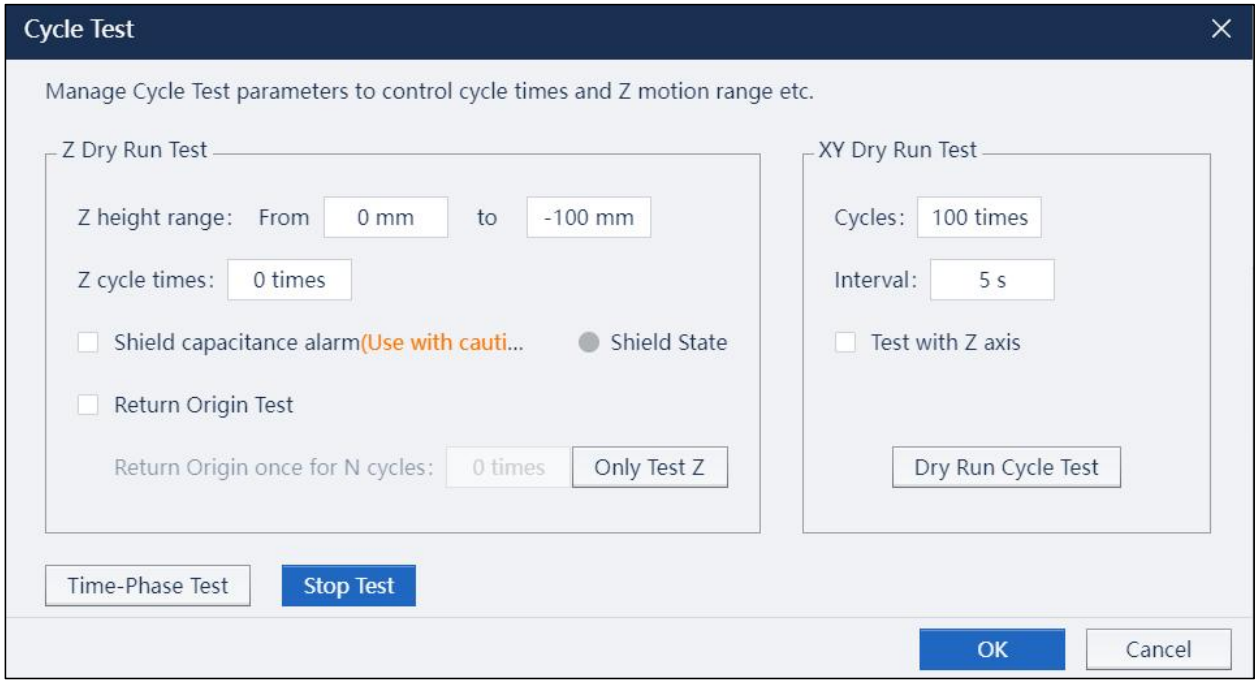


Figure 9-10 Cycle test

## 9.10 Lubricate Machine

When the machine's preset interval is reached, manual lubrication is required. Before use, configure ***Oil Output*** and perform ***Return Origin***. Then, set the lubrication parameters (range, interval, duration, cycles, and speed) and click ***Lubricate*** to start.

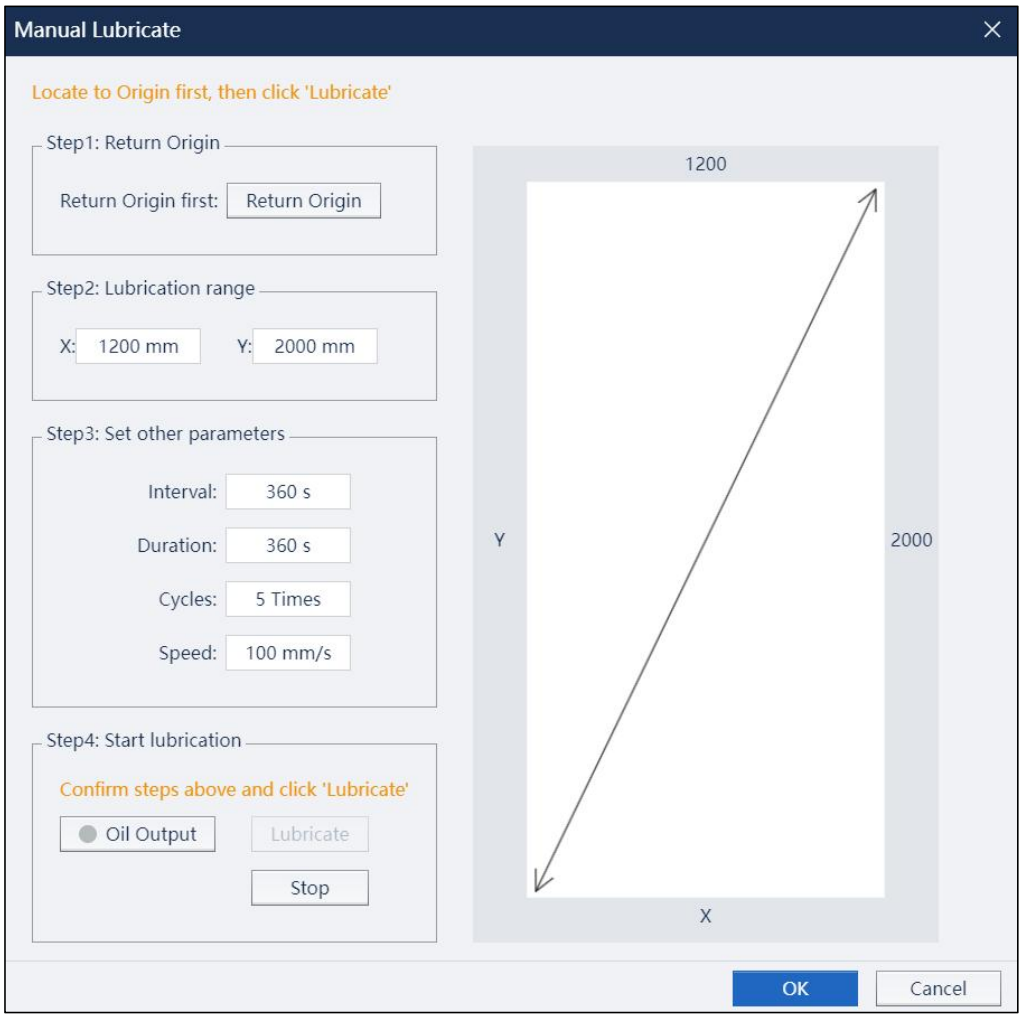


Figure 9-11 Lubricate machine

## 9.11 Maintenance

During equipment operation, this module tracks the usage time or running distance for various machine components (such as the laser, racks, reducers, motors, gas valves, and others). The system issues reminders and maintenance recommendations based on preset thresholds to support proper maintenance practices.

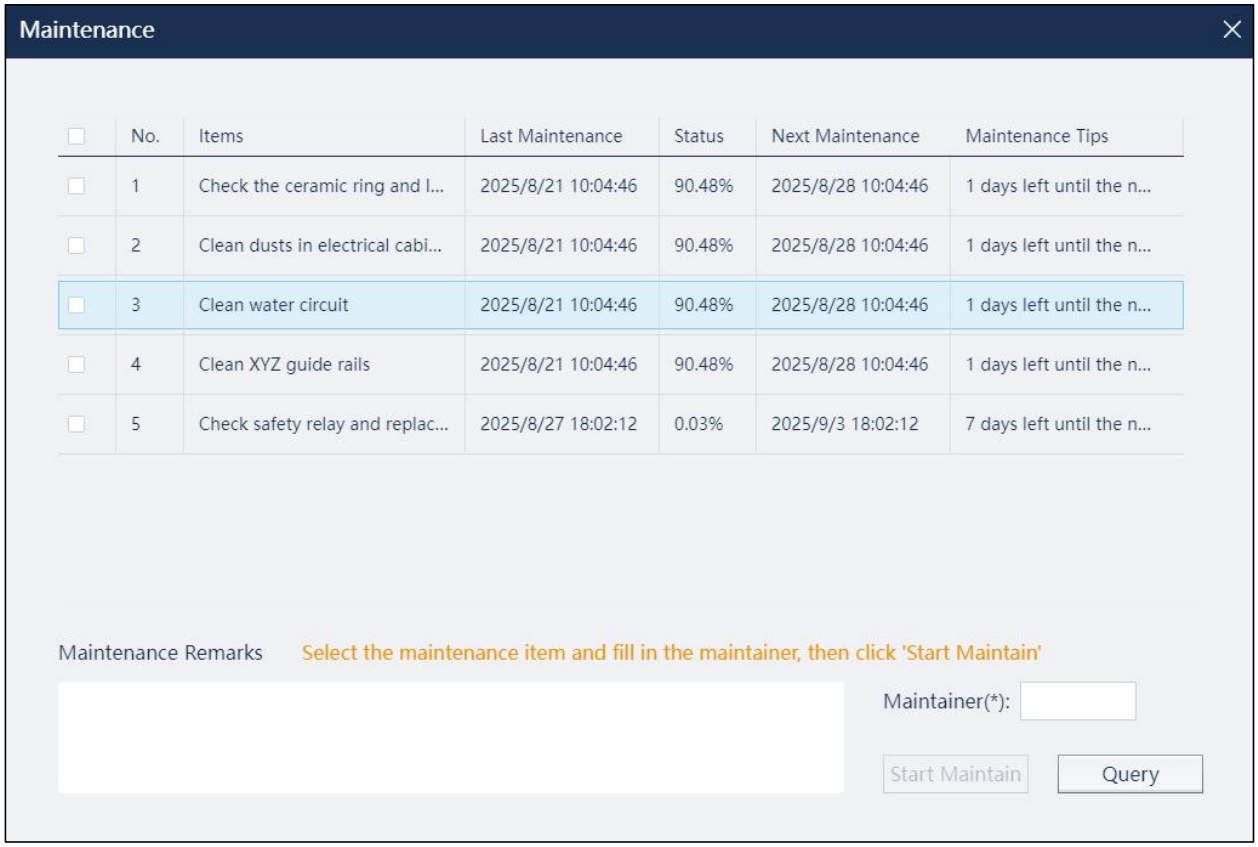


Figure 9-12 Maintenance

# Chapter 10 System Settings

## 10.1 System Parameters

Controls global machine parameters that affect overall operation including ***Motion Control***, ***Height Controller***, ***Gas***, etc. ***Search*** is supported to help quickly locate the target parameter.

### 10.1.1 Motion Control

Configures parameters for jog, travel and toolpath and production.

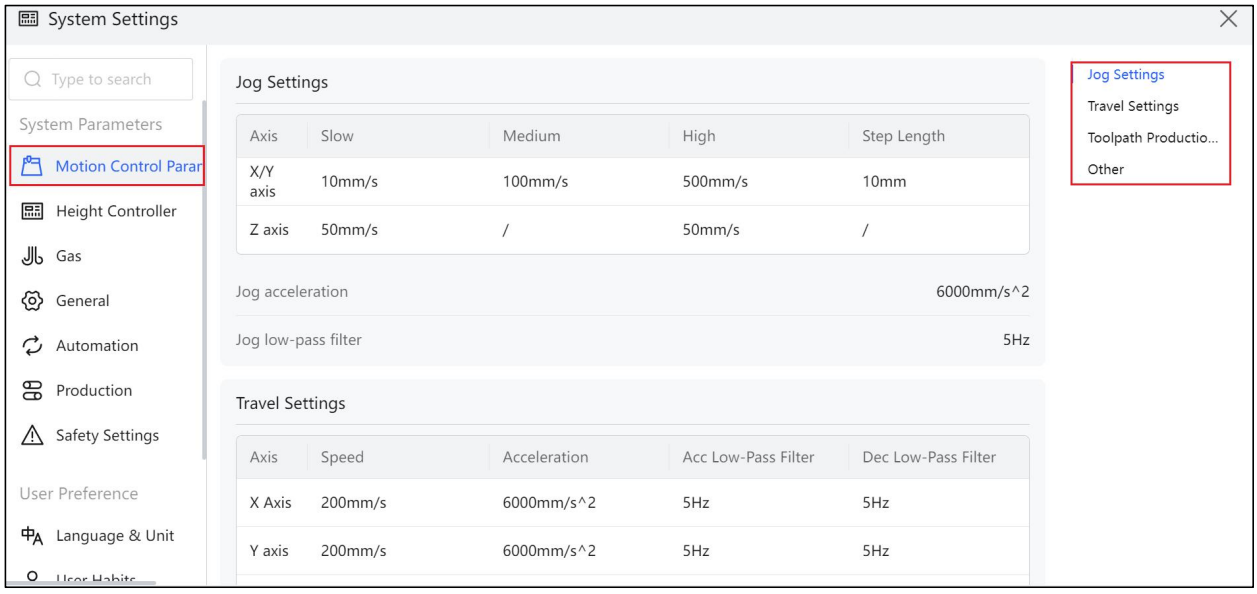


Figure 10-1 Motion control parameters

Motion control parameters description is shown as follows.

**Table 10-1 Motion Control Parameters Description**

| Category | Name | Description |
|---|---|---|
| Jog Settings | X/Y/Z Axis jog speed and step length | Sets single-axis step length and jog speed for slow/medium/high mode. |
| | Jog acceleration | Sets maximum single-axis jog acceleration (works with jog speed). |
| | Jog low-pass filter | Sets the jerk rate (derivative of acceleration) for a single-axis jog (works with jog acceleration). |
| Travel | X/Y/Z Axis Speed | Sets the speed of a single-axis travel motion (not the cutting |

| Category | Name | Description |
|---|---|---|
| Settings | | speed). |
| | X/Y/Z Axis Acceleration | Sets single-axis maximum acceleration during travel (works with travel speed). |
| | X/Y/Z Axis Acc Low-Pass Filter | Sets single-axis acceleration change rate during travel (works with travel acceleration). |
| | X/Y/Z Axis Dec Low-Pass Filter | Sets single-axis deceleration change rate during travel. |
| Toolpath Production Parameters | Cutting acceleration | Sets the maximum acceleration during cutting. |
| | Cutting low-pass filter | Sets the jerk rate (derivative of acceleration) for single-axis cutting (works with cutting acceleration). |
| | Curve accuracy | Controls the curve machining precision. A lower value can lead to a higher precision. |
| | Corner Control Precision | Controls corner machining precision. Controls the corner machining precision, affecting corner sharpness and speed reduction. A lower value can lead to a sharper but slower result. |
| Other | Frame speed | Sets the speed for ***Frame***. |
| | Forward/Backward distance | Sets the distance the cutting head moves per step when performing ***Forward*** or ***Backward*** in a paused state. |
| | Forward/Backward speed | Sets the movement speed of the cutting head when performing ***Forward*** or ***Backward*** in a paused state. |

## 10.1.2 Height Controller

Critical parameters for the height control system, including ***Z travel range***, ***Alarm Settings***, ***Follow and Calibration Settings***, and ***Vibration Suppression***.


Figure 10-2 Height controller parameters

Height controller parameters are shown in the following table.

**Table 10-2 Height Controller Parameters Description**

| Category | Name | Description |
|---|---|---|
| Z axis | Z travel range | Sets the maximum travel range of the Z-axis. |
| Alarm Settings | Follow Error | Sets maximum follow error allowed by Height Controller. After the cutting head follows in place, if the follow error exceeds this set value as the cutting head moves out of the plate edge or the plate shakes violently, a follow error alarm will be triggered. |
| | Follow Error Delay | Sets the follow error filtering time. A longer delay allows the system to tolerate the following error for a longer period, which also improves the system's ability to filter out interference. |
| | Local Capacitance Drop | Detects abnormal capacitance reduction. The system will trigger a local capacitance drop alarm if the local capacitance diminished exceeds the set value. |

| Category | Name | Description |
|---|---|---|
| | Pierce/Cut/Travel hit-plate alarm delay | When the system is in the stop, travel, cut, or piercing status, if the hit-plate duration reaches the set value, the cutting head will automatically lift up for protection and trigger the alarms. When the value is set to 0, the hit-plate alarm will no longer be triggered in the in stop, travel, cut, or piercing status. |
| | Hit-Plate Monitor | Once enabled, the software will trigger the hit-plate monitor based on the preset cycle and threshold. |
| Follow and Calibration Settings | Real-time Calibration | When enabled, calibration is performed based on the set interval. It is capable of avoiding cutting quality problems caused by capacitance fluctuation due to temperature shifts. |
| | Quick follow | Improves ***Frog Leap*** efficiency and thus cutting. |
| | Sharp corner follow | Suitable for cutting parts with sharp corners (e.g. triangles). When enabled, it can quickly follow the plate surface at sharp corners, reducing vibration and dwell time. |
| | Max follow height | Defines the maximum follow distance for the height controller during operation. When activated above the set distance, clicking ***Follow*** will move the cutting head close to the plate and then lift up to ***Max follow height***. |
| Vibration Suppression | Vibration Suppression | When enabled, it is capable of suppressing the vibration caused by the cutting airflow on the plate with weak structural rigidity, reducing the cross-section wavy lines. Meantime, it helps suppress the vibration from gas blow and surface slags. |
| | Interval | Determines the intensity of vibration. A higher value can lead to a stronger but slower response. The default value is 20 ms, and the recommended range is from 5 to 50 ms. |

### 10.1.3 Gas

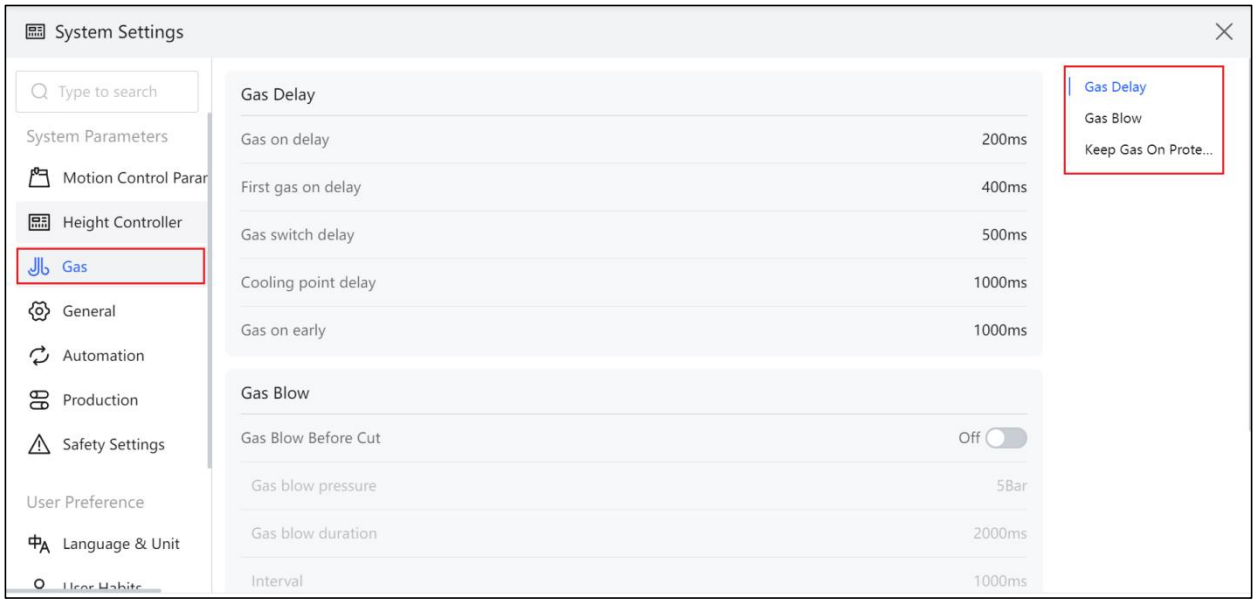


Figure 10-3 Gas

Sets the parameters related to gas delay and gas blow. The parameters description is detailed in the following table.

**Table 10-3 Gas Parameters Description**

| Category | Name | Description |
|---|---|---|
| Gas Delay | Gas on delay | Gas activation delay before laser is activated. |
| | First gas on delay | Extended gas delay for the initial blow (ensures clean start). |
| | Gas on early | Sets pre-gas activation time during travel. |
| | Gas switch delay | Transition time to reach a stable pressure for the cutting head when switching gases. |
| | Cooling point delay | Gas duration at cooling points (prevents corner overheating). |
| Gas Blow | Gas blow pressure | Pressure when performing a gas blow. |
| | Gas blow duration | Blow time for a single gas blow. |
| | Interval | The off-gas time of the gas blow process. |
| | Gas blow at Start | Number of gas blows before initial cut (clears residual debris). |
| | Gas blow at Resume | Number of gas blows after pauses (re-establishes gas flow). |
| Keep Gas On Protection | Gas safety pressure | When ***Keep gas on*** is enabled on the ***Technique*** page, you can choose whether to enable ***Keep Gas On Protection***.<br>● If enabled, the system will continuously supply gas during |

| Category | Name | Description |
|---|---|---|
| | | travel according to the preset ***Gas safety pressure***.<br>• If disabled, the system will supply gas during travel based on the ***Gas pressure*** defined in the ***Technique*** → ***Cut Params***. |

### 10.1.4 General


Figure 10-4 General settings

Includes ***Find Edge Settings***, ***Resume Settings***, and ***Machine Features***, and some of the parameters are described in the table below.

**Table 10-4 General Settings Description**

| Category | Name | Description |
|---|---|---|
| Find Edge Settings | Special Find Edge | When enabled, all the edge-finding methods become directly following the plate surface and detect the plate edge—more concise and faster. |
| Resume Settings | Stepback on Resume | After a pause, automatically move backward along the machining path before resuming interrupted operations. |
| Machine Features | System latency | Servo response delay. |
| | Improve efficiency but stronger impact | Efficiency first, accuracy second, and machine impact last. This function is suitable for an exhibition demo. |
| | Reduce impact | Suitable for low-rigidity machines (e.g., those |

| Category | Name | Description |
|---|---|---|
| | | experiencing major impact at 3 to 4 Hz). When enabled, the system will prioritize reducing dynamic impact during machining, thereby alleviating machine load. |

## 10.1.5 Automation

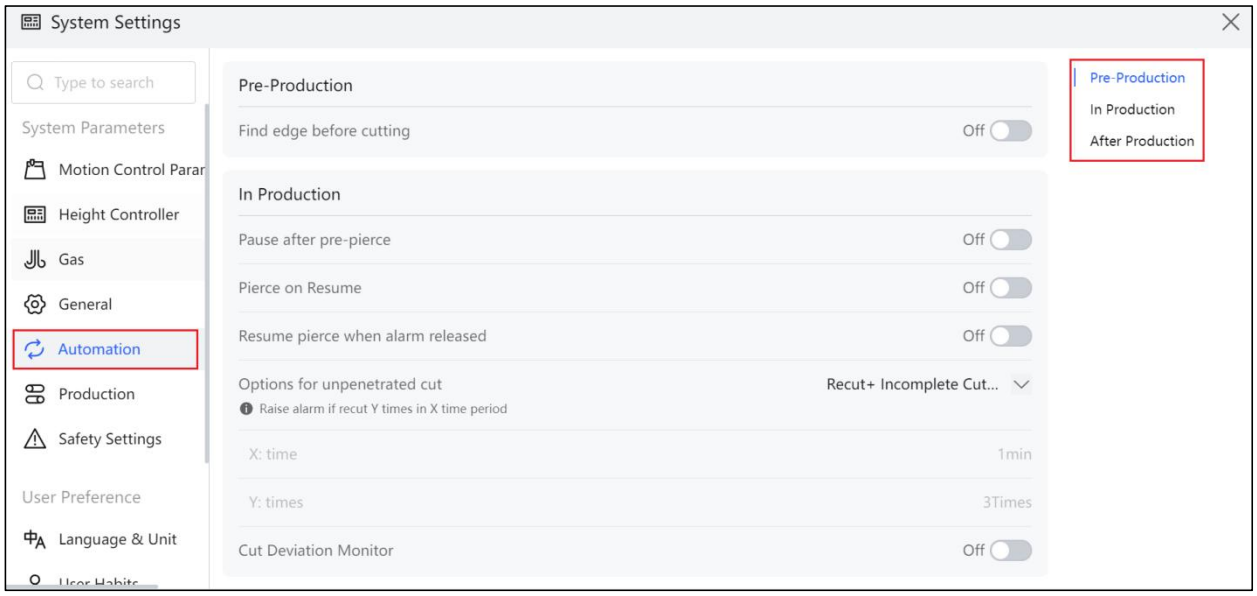


Figure 10-5 Automation

Includes functions across the production process, as described in the table below.

**Table 10-5 Automation Parameters Description**

| Category | Name | Description |
|---|---|---|
| Pre-Production | Find edge before cutting | Before cutting, the system performs capacitive edge-finding. This operation detects the plate corners along its edge, calculates the skew angle, and automatically corrects the angle of the target graphics. It is intended to ensure that the target graphic aligns with the plate. |
| In Production | Pause after pre-pierce | Machining is paused after the execution of the pre-piercing. |
| | Pierce on Resume | When enabled, piercing will restart when machining resumes. |
| | Resume pierce when | It is suitable for cutting some poor materials, which |

| Category | Name | Description |
| --- | --- | --- |
| | alarm released | triggers the alarm after the hit-plate and then pauses the cutting. Enabling this function can continue the piercing after releasing the hit-plate alarm. This function allows for a smoother, more consistent production process and reduces unnecessary downtime. |
| | Options for unpenetrated cut | When enabled, the system automatically detects if the plate is penetrated during processing. You can customize the response (like ***Alarm***) after uncut is detected. |
| | Cut Deviation Monitor | During the machining process, detects the matching between the graphic position and the machining position. When the system detects that the error is greater than 20 mm, an alarm will be triggered. |
| After Production | Clear Edge Angle after Production | Automatically clears the last edge-finding result after finishing machining, preventing the last data from affecting the next machining. |
| | Auto change drawing after production | Automatically switches to the next drawing when the current task is completed, improving production efficiency |
| | Return to | Specifies the return position of the cutting head after machining is completed. |

## 10.1.6 Production


Figure 10-6 Production

Contains travel and technique settings, described in the table below.

**Table 10-6 Production Settings Description**

| Category | Name | Description |
|---|---|---|
| Travel Settings | Linear travel | When enabled, the cutting head travel motion is linear, bringing a smoother visual motion effect. |
| | Frog Leap lift | When checked, a frog leap lift will be used during travel. Before the Z-axis is lifted into position, the X/Y-axis starts to travel to shorten the travel time. |
| | Short travel no lift | When enabled, the Height Controller does not lift and remains following during travel shorter than the set value, eliminating unnecessary Z-axis retractions. |
| | Barrier-Avoid Frog Leap | When checked, it auto-adjusts the frog leap height based on part warping detection. |
| | Swift Frog Leap | Optimizes frog leap motion during travel. |
| Technique Settings | Pierce at co-edge start point | Performs pierces at all co-edge start points. ***Co-edge pierce detection*** takes priority if it is enabled at the same time. Piercing is performed only where it is needed. |
| | Pre-pierce method | Choose the pre-pierce type (group or whole plate), which |

| Category | Name | Description |
|---|---|---|
| | | coordinates with the ***Defilm type*** to form the ***Defilm and pierce order***. For example, if you set the pre-piercing to be performed in ***Group*** and the de-filming in ***Single path***, the individual parts will all be pre-pierced first, then de-filmed, and finally cut. |
| | Defilm type | Choose to perform defilm in group, whole plate, or single path. |
| | Defilm and pierce order | Sets the sequence of defilming and piercing. |
| | Disable follow | Disables height following and works for ***Z locate coordinate*** (for non-metal cutting). |
| | Fly cut at Microjoint | Enables fly cut across microjoints (for the graphics added microjoints only), improving efficiency and saving time. This function does not work after using the piercing technique. |
| | Adjust Microjoint and Gap in tech table | Allows microjoint/gap size modification in the ***Technique*** interface. |
| | Default technique check | Detects whether the cutting task has configured the machining technique parameters. |
| | Auto match technique | For the drawings exported from CypNest, HypCutRevo allows automatically matching the technique entry in the technique library based on material, thickness, and gas. This can reduce setup technique operations and improve work efficiency. |
| | Dynamic defilm | During pauses, changing the enable/disable status of ***Defilm*** on the ***Technique*** → ***Cut Params*** → ***Production Control*** page takes effect in the next section of the toolpath. |
| | Pierce Deviation Alarm: | Supports piercing detection at pre-piercing positions.<br>● Co-edge pierce detection (enabled) + Pierce Deviation Alarm (enabled): If the plate is detected, the software issues an alarm indicating "Plate misalignment is detected" and pauses. Alarm can be cleared manually to continue.<br>● Co-edge pierce detection (enabled) + Pierce Deviation Alarm (disabled): If the plate is detected, the machine system re-pierces and continues. |

| Category | Name | Description |
| --- | --- | --- |
| | | • Co-edge pierce detection (disabled) + Pierce Deviation Alarm (enabled): No detection, no alarm, and no re-piercing.<br>• Co-edge pierce detection (disabled) + Pierce Deviation Alarm (disabled): No detection, no alarm, and no re-piercing. |
| | Smooth Pierce 5.0 | Performs the corresponding movement within the set travel/pierce height/ follow tolerance, enhancing ***Smooth Pierce*** efficiency. |
| | Adjust kerf offset in tech table | Enables kerf compensation adjustment in the ***Technique*** interface. This function is only accessible for the graphics added compensation (excludes co-edge and fly-cut graphics). |
| | One-path marking | Enabled by default, optimizing marking efficiency. |
| | Fly cut overcut | Supports setting overcut for fly-cut graphics to minimize the risk of plate warping. |
| | Cutoff extension | Automatically extends separation cuts beyond the set cutoff line length. |

## 10.1.7 Safety Settings

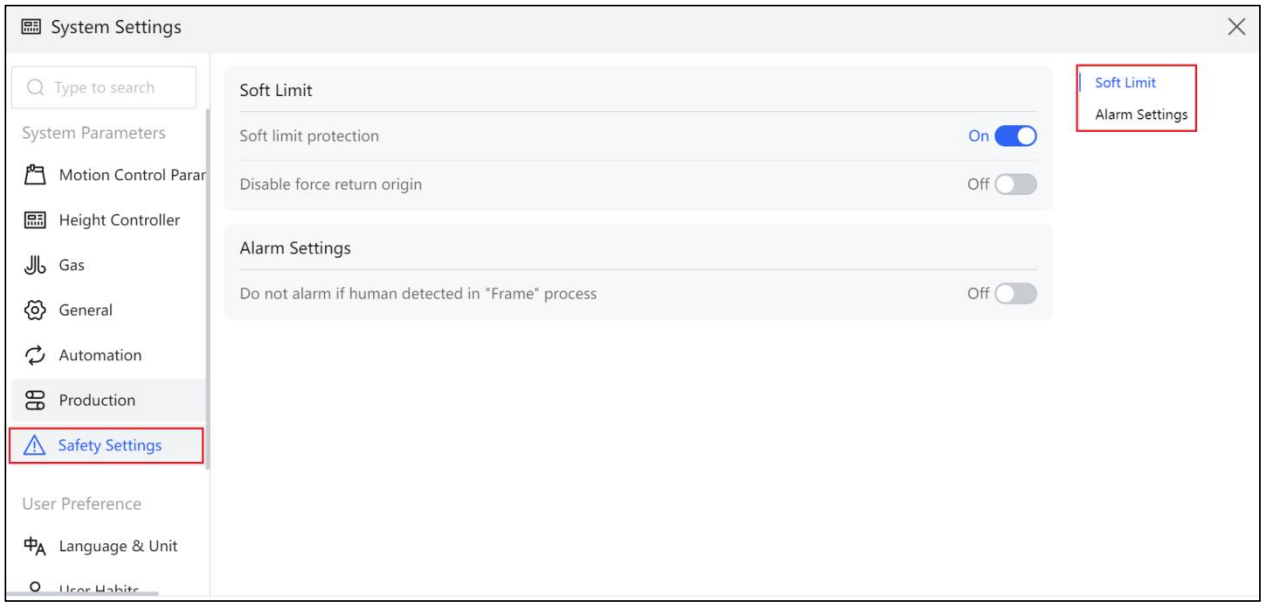


Figure 10-7 Safety Settings

This section configures soft limit and alarm settings to ensure operational safety.

**Table 10-7 Safety Settings Description**

| Category | Name | Description |
|---|---|---|
| Soft Limit | Soft limit protection | Enabled by default. The system automatically detects the risk of machine movement outside the travel range to ensure safe machine operation. |
| | Disable force return origin | After launching the software, the software by default requires ***Return Origin*** to ensure the correct coordinate system. Enable this function if you do not want an alarm prompt. |
| Alarm Settings | Do not alarm if human detected in "Frame" process | For safety, the software triggers an alarm or warning when a person is detected in the machine's monitoring area. When this option is enabled, no alarm will be triggered during ***Frame***, even if a human is detected. |

## 10.2 User Preference

Used to configure language, unit, software display, CAD settings, and drawing processing parameters based on personal preferences.

### 10.2.1 Language and Unit

Supports switching between multiple languages and units to meet the needs of different regions and user preferences. The software includes 17 built-in languages (including English, French, Spanish, Italian, Japanese, Russian, Portuguese, etc.), which can be switched with one click. At the same time, it provides customizable settings for software display, speed, acceleration, gas pressure, and time units, ensuring that you have an operating experience consistent with local practices during production.


Figure 10-8 Language and unit

## 10.2.2 User Habits

To accommodate operational requirements in different scenarios, the software provides multiple custom settings. You can flexibly adjust software theme color, edge-finding settings, task import rules, and control center display, ensuring that the interface layout and function configuration align with actual operational habits.

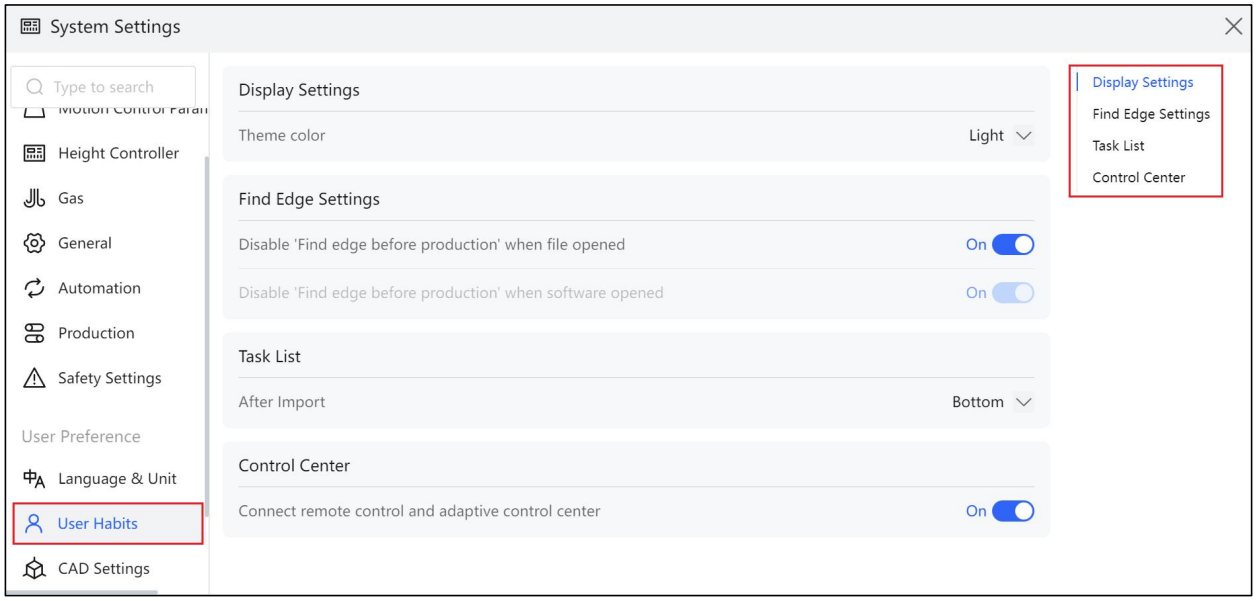


Figure 10-9 User habits

### 10.2.3 CAD Settings

Used to configure drawing-related control parameters, such as auto-attach and object capture. When enabled, these settings improve positioning accuracy and operational efficiency during drawing or editing of graphics.


Figure 10-10 CAD settings

## 10.2.4 Drawing Processing

When importing files in *.dxf, *.plt, *.gen, or *.nc formats, the software automatically executes preprocessing based on the configured optimization parameters (such as ***Delete Duplicates***, ***Join Nearest Lines,*** and ***Auto Smooth***), ensuring that the drawing quality meets subsequent technique setup and machining requirements.

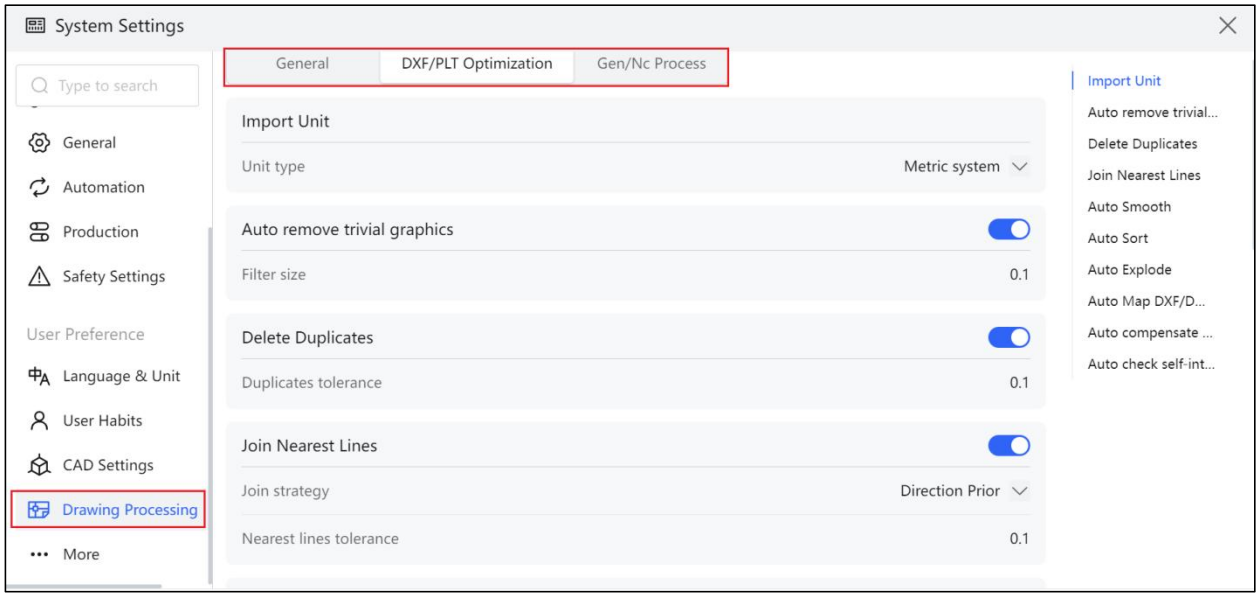


Figure 10-11 Drawing processing

# Chapter 11 User Menu

## 11.1 About

Displays system/machine information including release date, control card model, laser model, cutting head model, height controller model, validity, among others.

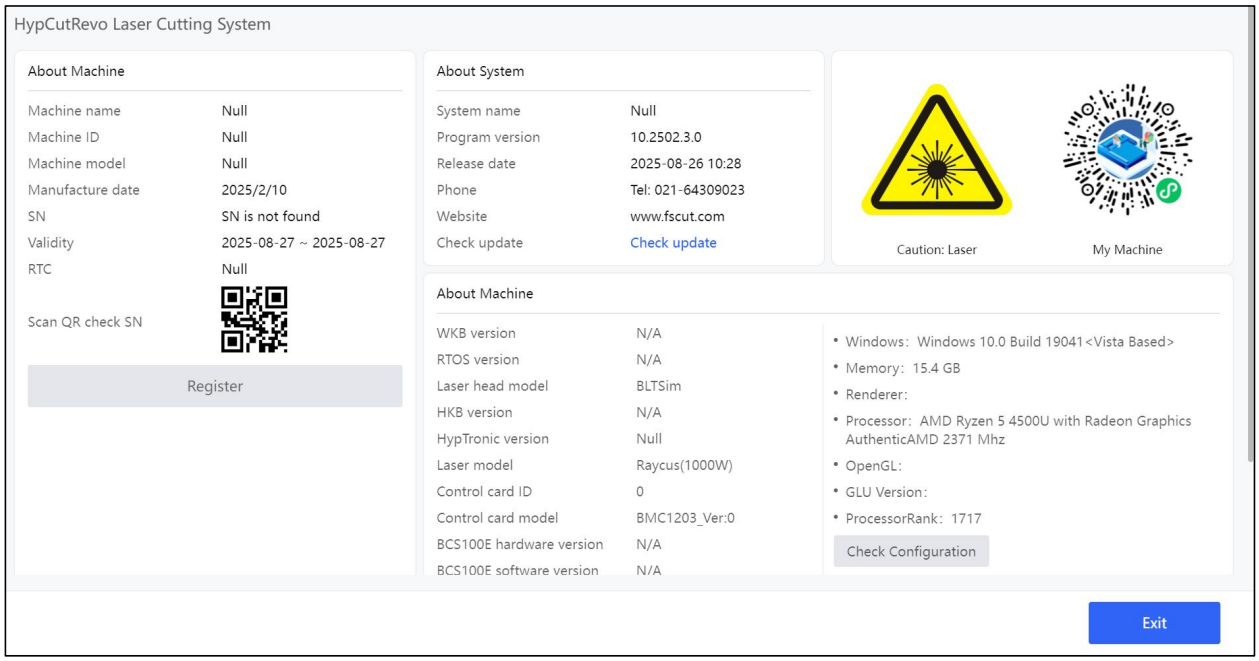


Figure 11-1 About interface

## 11.2 Permission Mangement

HypCutRevo supports dual-access modes for different user roles: operator and manufacturer. In the user menu, click the profile icon (top-left) and enter the password **BOCHU** to switch to the manufacturer mode.

To ensure production safety, manufacturer mode allows managing operator permissions, hiding certain functions, or setting them to read-only. In this mode , you can enter the ***Config Tool*** to scan all the slaves and configure parameters such as ***Axis Config***, ***Return Origin***, ***Assist Gas***, ***Laser***, ***General Input/Output***, ***Alarm***, ***Pallet Changer***, etc.

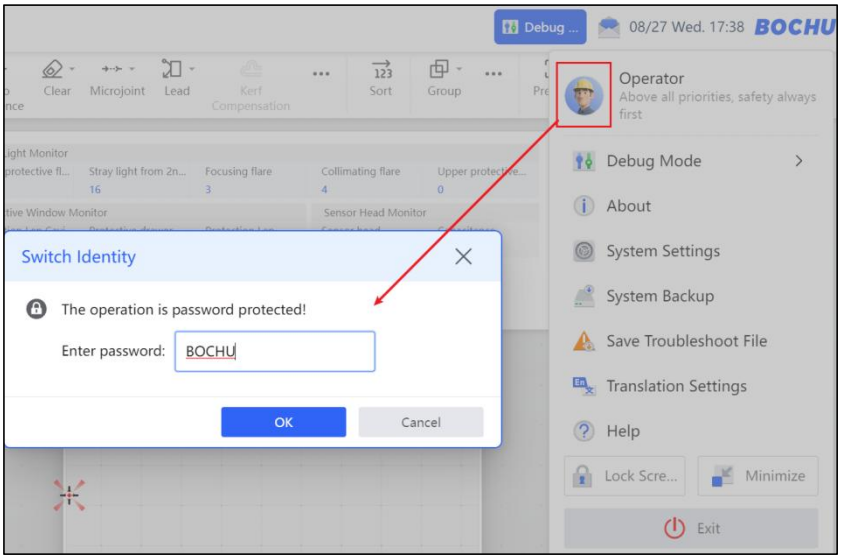


Figure 11-2 Switch to the manufacturer mode

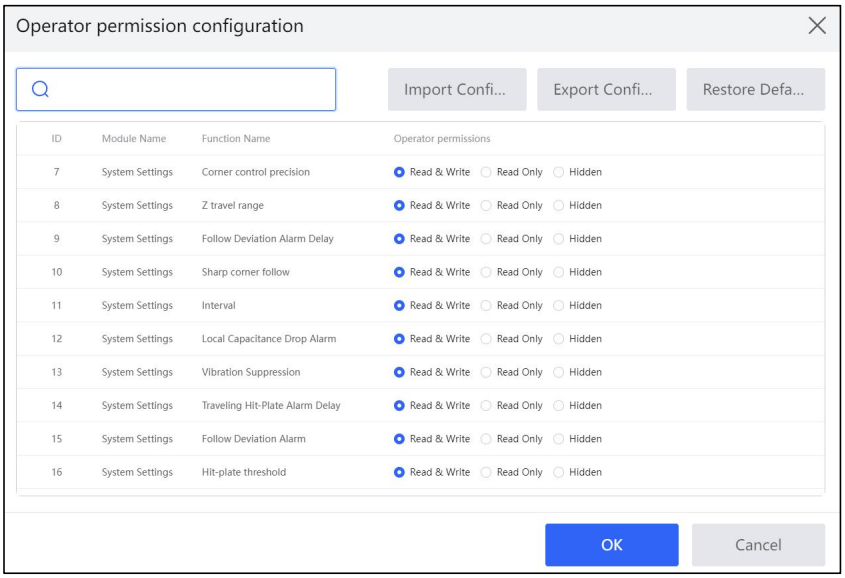


Figure 11-3 Manage permissions

## 11.3 Save and Backup

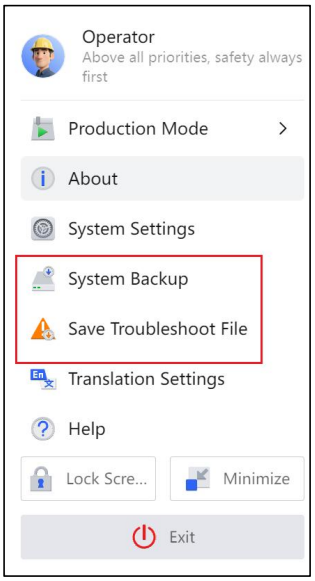


Figure 11-4 Parameter backup and troubleshoot file saving

- System Backup: Open the user menu and select ***System Backup*** to save the machine parameters locally. The backup file can be used for debugging or uploaded to CypNest to bind machine information. To recover:

  1. Double-click the *.cfgpkg file.
  2. Select the data items to recover, including ***TechDB***, ***Pallets Scripts***, and other normal parameters.
  3. Click ***Recover*** to apply the selected data to the machine.

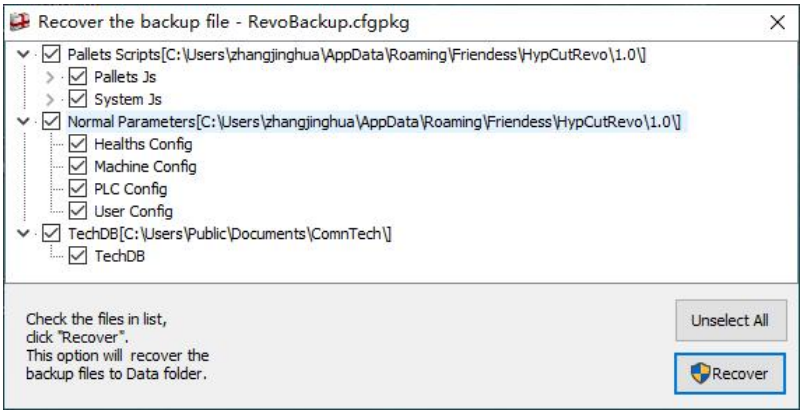


Figure 11-5 *.cfgpkg file

- Save Troubleshoot File: Allows exporting drawings, logs, alarms, and other information as a fault information package for subsequent troubleshooting.

## 11.4 Translation Settings

Enables rapid correction of translation omissions or errors in the software interface to ensure localization accuracy.

Hold ***Ctrl*** and left-click the target UI element to modify or in the editor. For example, if the current system language is French, change the translation of ***Cut selected only*** to ***Usiner sélection seule***. Save it to take effect in the interface.

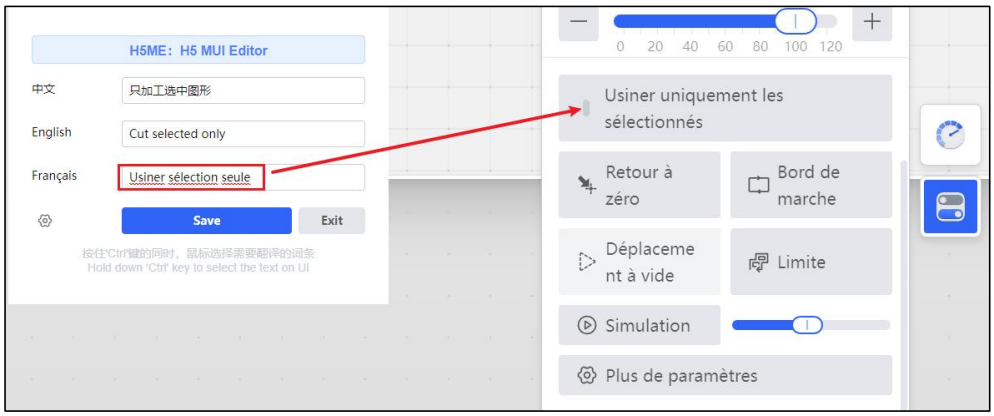


Figure 11-6 Modify UI translation

Additionally, the software supports importing and exporting language packs. After exporting the modified translation language pack, you can upload it to other HypCutRevo systems for use.

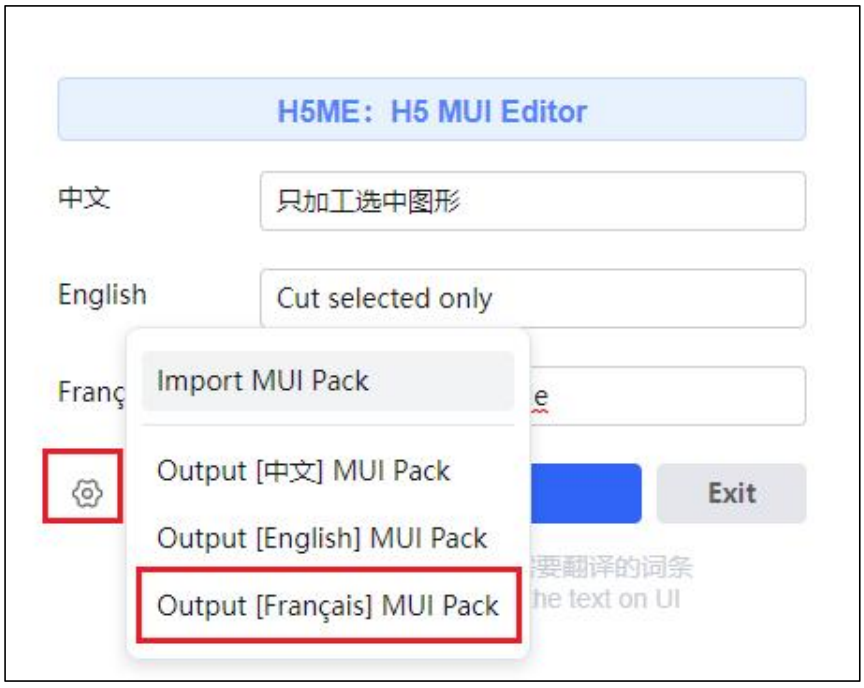


Figure 11-7 Import and export language packs

## 11.5 Help

Provides operational guidance and efficiency tips to help you quickly master the common workflow and functions.

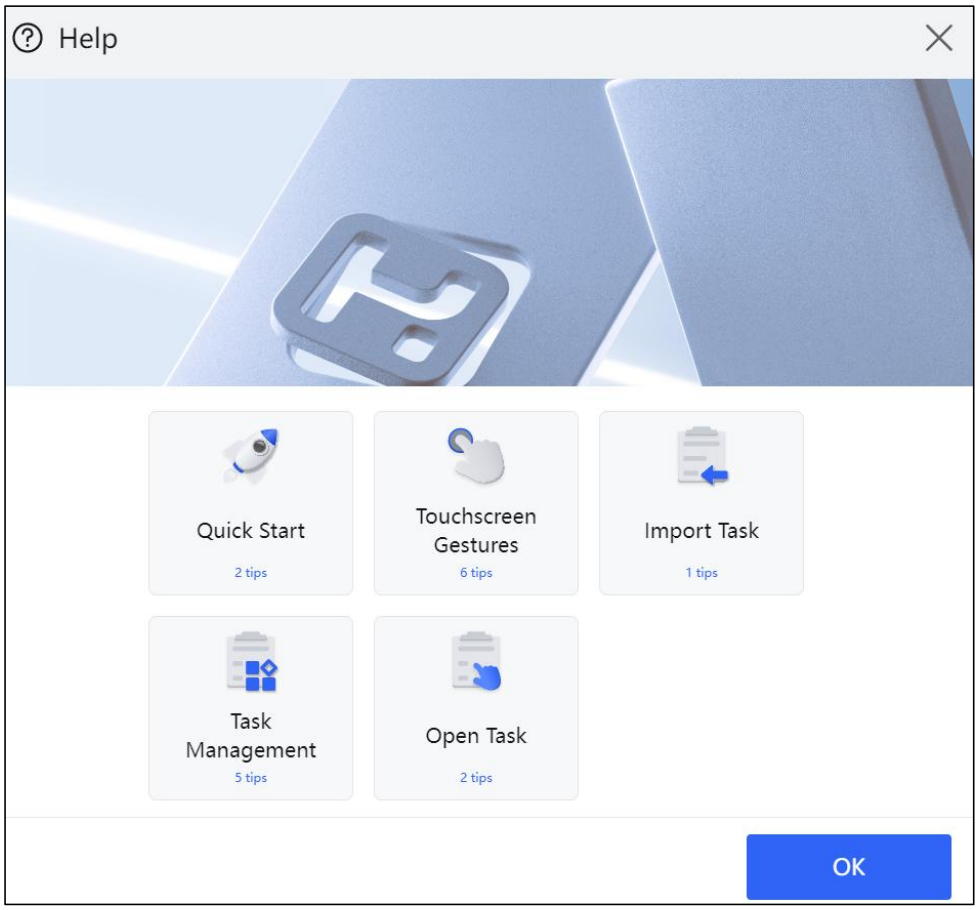


Figure 11-8 Help

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