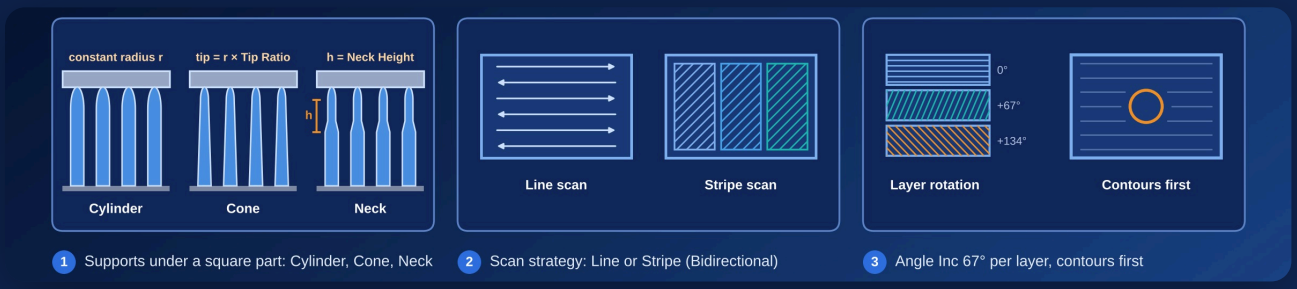
ADDITIVEELITE

USER GUIDE

Design, support, slice and cost every additive part.

STL Repair · 3D Support Generator · SLM/EBM, DED, FFM and Concrete Slicers · ERP



1 Supports under a square part: Cylinder, Cone, Neck

2 Scan strategy: Line or Stripe (Bidirectional)

3 Angle Inc 67° per layer, contours first

English edition

Version 1

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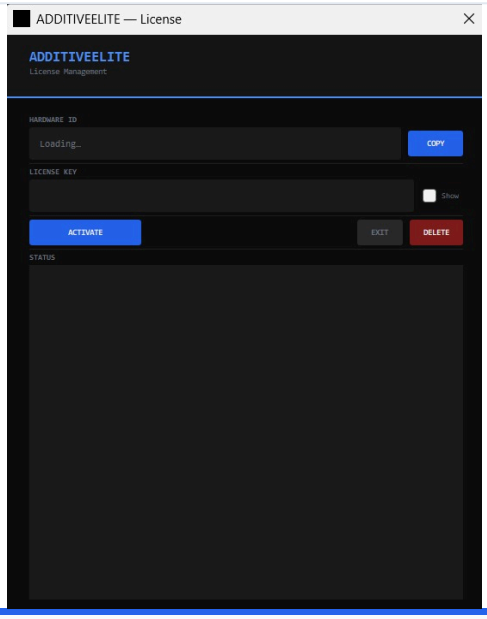
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01 OVERVIEW Getting started

ADDITIVEELITE is an all-in-one additive manufacturing suite in which six modules share one geometry engine. A part moves from repair to supports, slicing and costing without leaving the application. Each module opens in its own window; every module except the free STL Repair Tool starts with a license check.

Activate your license

1. **Hardware ID.** Shows "Loading..." while it is read, then fills in automatically. Press **COPY** to copy it.
2. **License key.** The field starts empty. Paste your annual activation key; tick **Show** to reveal the characters.
3. **ACTIVATE.** Validates the key. The status log shows the expiration date and ends with "Ready to launch".
4. **EXIT / DELETE.** EXIT closes the window, DELETE removes the current activation. Every module also has a **License** menu.



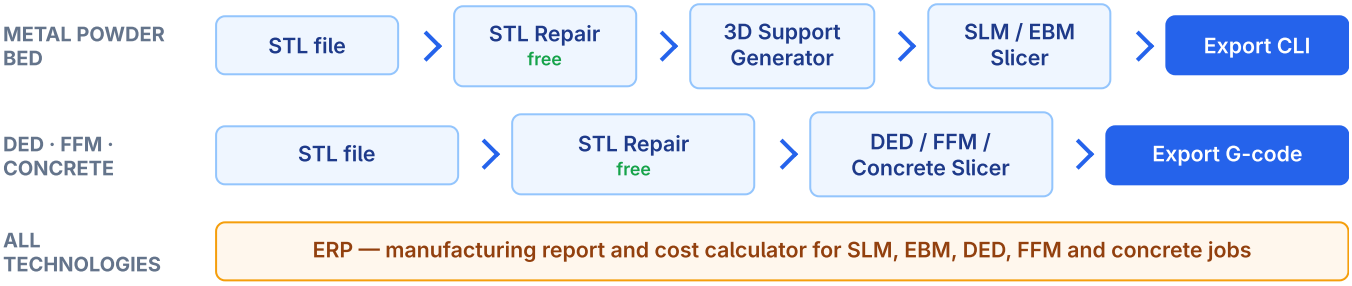
The License window: Hardware ID, license key, ACTIVATE, EXIT / DELETE and the status log.

The six modules

Module	Process / feedstock	What it does
STL Repair Tool (free)	Any mesh	Checks a model against 10 status tests and repairs it; split repair for very large meshes. AI Agent included.
3D Support Generator + SLM/EBM Slicer	Laser / electron-beam powder bed	Loads STL or 3MF, arranges parts, detects overhangs, generates and unions supports, edits with CAD tools and slices. AI Agent included.
DED Slicer	Laser / e-beam wire or powder; WAAM (wire arc)	Slices for directed energy deposition; B axis for belt systems. AI Agent included.

Module	Process / feedstock	What it does
FFM Slicer	Filament, pellet	Slices large or changing-table-size polymer parts; filament and two pellet extrusion modes. AI Agent included.
Concrete Slicer	Concrete	Large-format wall, infill, foundation and top passes with four infill strategies. AI Agent included.
ERP — Manufacturing / Cost Report	SLM, EBM, DED, FFM, concrete	Project documents, process data, costing, billing and reports; presets per technology. AI Agent included.

Workflow overview



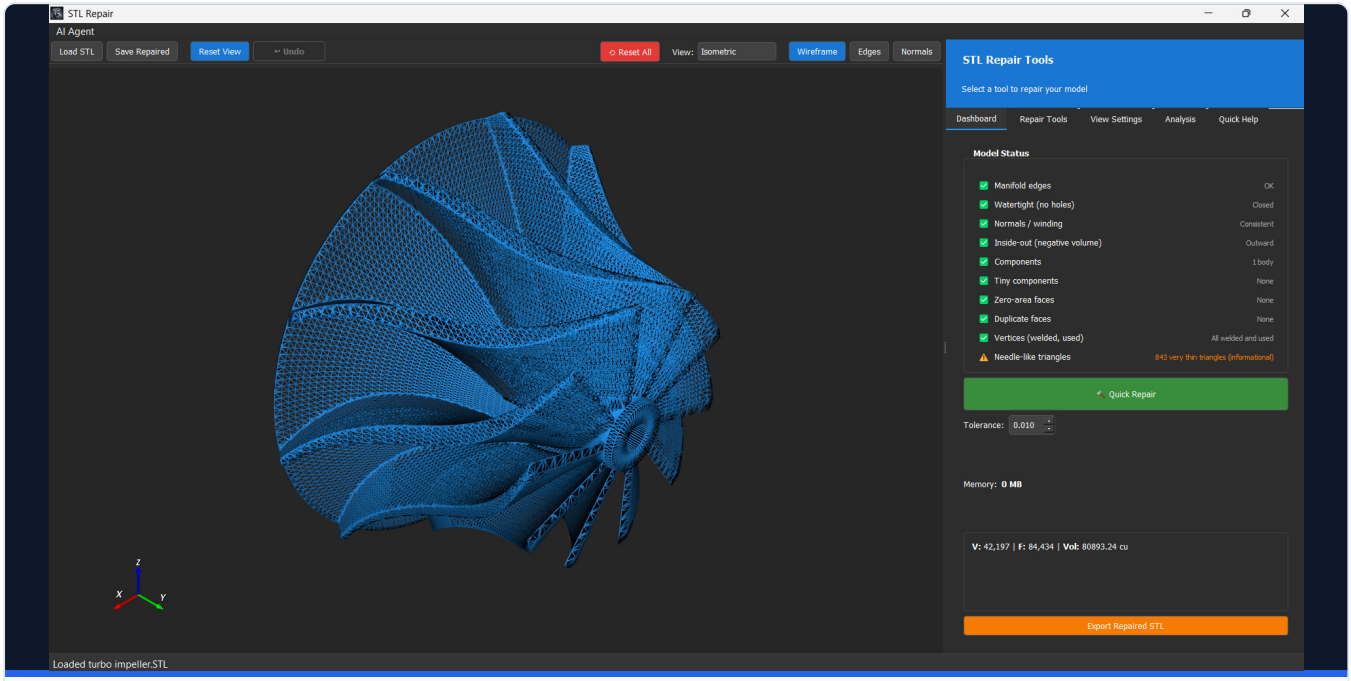
Common interface pattern

Once you know one slicer, the others feel familiar.

Area	What you find there
3D / layer view	Iso, Top, Front and Side buttons, plus Mesh, Paths, Plate and Plane toggles in the DED, FFM and Concrete slicers. Left-drag rotates, right-drag zooms, middle-drag or Shift + left-drag pans, a click selects a part.
Layer slider	At the bottom of the view; scrub through sliced layers. The readout shows the layer number plus scan angle or Z height.
Right-hand panel	Build volume, parts list (Add STL / 3MF, Reset All), part position and rotation (Center, Reset Rot) and process parameters.
Action buttons	SLICE ALL (or SLICE MODEL), then Export G-code — or Export CLI in the SLM/EBM slicer. Re-slice after any change: the preview always shows the last completed slice.
Status bar	Layer, contour and path counts after slicing, plus a LICENSED indicator. **Quick Help** in each module gives context help.

02 FREE MODULE
STL Repair Tool

Check a mesh and fix it before it goes to supports or slicing. The tool works on the whole model in one pass, or as a split repair for very large meshes.



STL Repair with a sample turbo impeller loaded; Model Status checks and Quick Repair on the right; AI Agent in the menu bar.

1. **Load the model.** Press **Load STL** in the top bar. Large files are read in chunks, so the window stays responsive; the progress dialog lets you cancel.
2. **Read Model Status.** The Dashboard tab lists ten checks: Manifold edges, Watertight, Normals / winding, Inside-out, Components, Tiny components, Zero-area faces, Duplicate faces, Vertices and Needle-like triangles. A green tick means no problem; an orange warning is informational.
3. **Repair.** Use **Quick Repair** on the Dashboard (with the Tolerance field) or the individual buttons in the Repair Tools tab. A step that empties the mesh or loses most of its faces is rejected automatically.
4. **Inspect.** Switch the view (Perspective, Front, Top, Right, Isometric) and toggle Wireframe, Edges and Normals. Re-check the status after each repair.
5. **Save.** Press **Save Repaired** in the top bar or **Export Repaired STL** in the panel.

Good to know

- Quick Repair fixes normals, open edges, intersections and holes, then removes small parts. Noise reduction and simplification are not part of it — run them separately.
- **Tolerance** is the small-component threshold: 0.01 removes components smaller than 1 % of the largest one.
- **Undo Last Repair** steps back; **Restore Original** returns to the loaded file.
- Above roughly 150,000 faces the heavy checks run in the background and show "Calculating...".

Very large meshes: split repair and union

Tick **Split + Multi-Core Repair + Union** in the Parameters box and choose the part count. The next repair runs in three stages: the model is cut into parts, every part is repaired in parallel, and the parts are unioned back together. If a seam will not union, a small overlap is applied (Retry Overlap, Step, Tries). If the union still fails, **Retry Union Only** repeats just the union step.

03 3D SUPPORT GENERATOR
Model tab

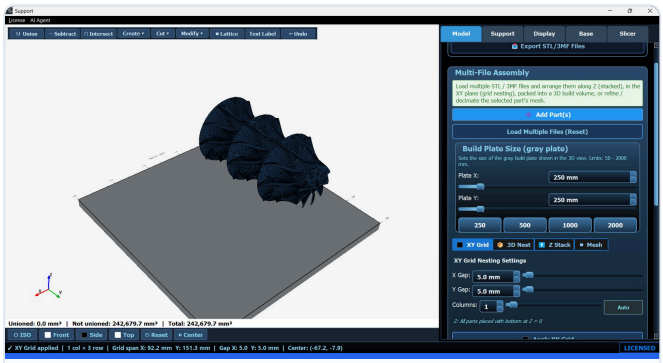
The Model tab loads STL or 3MF files, lays parts out on the plate and prepares the mesh before supports are generated.

Control	What it does
Volume info bar	Shows Unioned, Not unioned and Total volume (mm³) below the view and updates automatically. Parts and supports that have not gone through a union step count as "Not unioned". Shows "Volume: -" when the scene is empty.
Load Multiple Files (Reset)	Clears the whole scene, loads one or more STL / 3MF files and arranges them in an XY grid.
Add Part(s)	Adds files without clearing anything; supports, rotations and base support are kept. New parts are placed to the right with their bottom at Z = 0.
Export STL/3MF Files	Enabled once a model is loaded or unioned. For several parts, save one file per part or all parts in a single 3MF.
Build Plate Size (gray plate)	Sets the size of the gray platform in the 3D view (Plate X and Plate Y, 50–2000 mm). The 250 / 500 / 1000 / 2000 quick buttons also work. Parts are not moved or limited.
Selecting parts	Click on screen or in the Loaded Parts list; Ctrl + click adds or removes; Shift + click selects a range in the list. Delete or Backspace removes the selection and its supports.
Rotating parts	Use the X / Y / Z buttons with a chosen angle; the part keeps its bottom on the plate. Reset Rotation restores the original orientation.

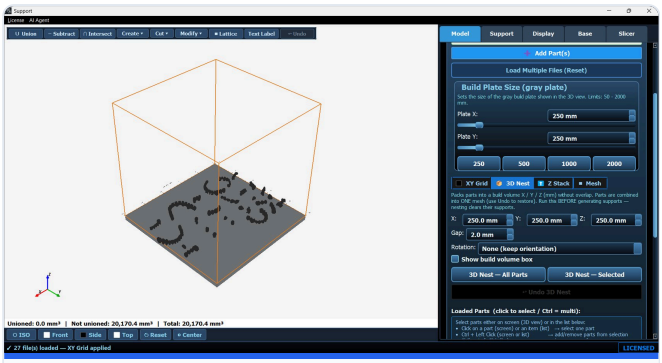
Layout tabs

Inside Multi-File Assembly you find four layout tabs: **XY Grid**, **3D Nest**, **Z Stack** and **Mesh**.

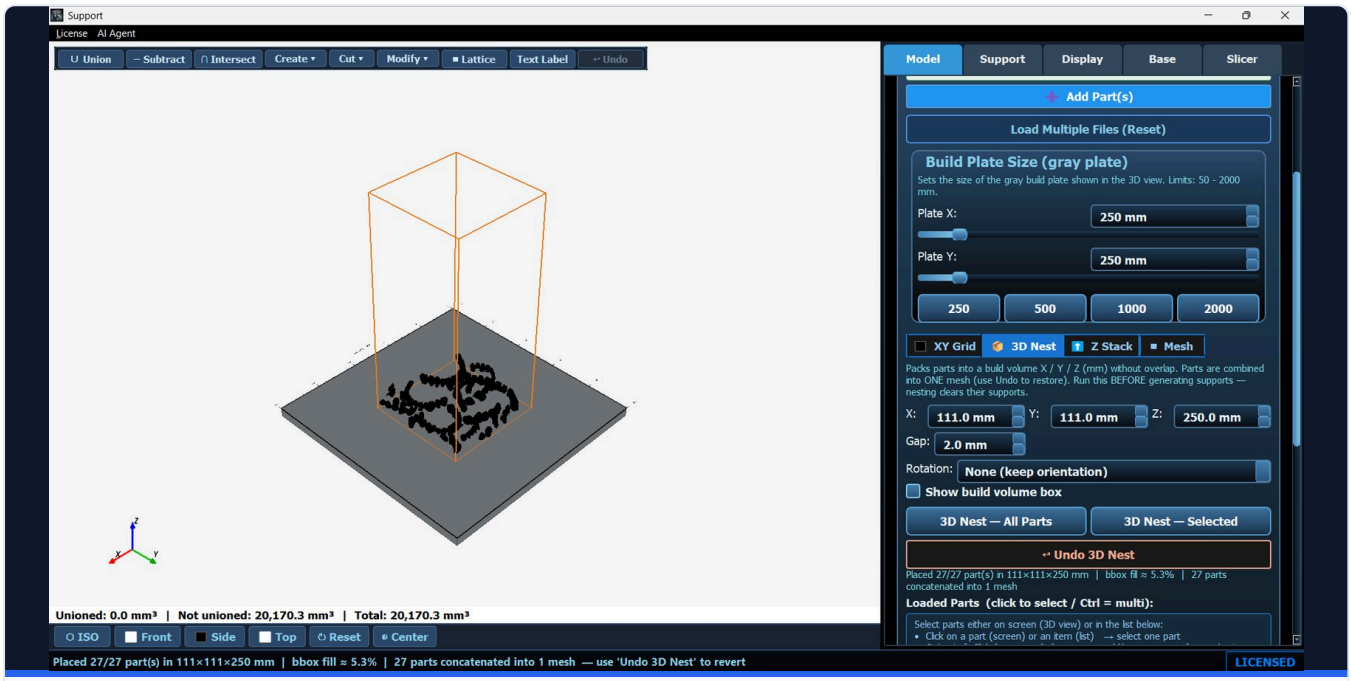
- **XY Grid** — X Gap, Y Gap and Columns (Auto = square root of the part count) rearrange the parts live; Apply XY Grid confirms.
- **Z Stack** — stacks parts along Z. The stacked parts are combined into one list entry; Undo Z-Stack Merge restores the originals.
- **3D Nest** — packs parts without overlap into the X / Y / Z build volume you enter. Set Gap and Rotation: None keeps the orientation, Z-only (90°) swaps X and Y, Any 90° tries every orientation (densest, but overhangs change). Run it for All Parts or Selected. Parts that do not fit are placed outside the volume and reported.
- **Mesh** — simplifies or refines the selected part (see below).



XY Grid applied: 1 column × 3 rows, X and Y gap 5.0 mm. The status bar reports the grid span.



Before 3D Nest: 27 files loaded, 250 × 250 × 250 mm build volume.



After 3D Nest: 27 parts packed into 111 × 111 × 250 mm (box fill about 5.3 %). The Undo 3D Nest button is now active.

Before you nest

- 3D Nest and Z Stack combine the moved parts into one mesh and delete their supports (you are asked first). The result is not a union; the volume stays "Not unioned".
- Undo 3D Nest does not restore supports. For per-part supports after a nest, undo the nest first.
- Undo works as a stack: press Undo 3D Nest repeatedly until it greys out to return to the first state.

Mesh — simplify and refine

Works on the selected part (or the single loaded model) and clears that part's supports, so generate them afterwards.

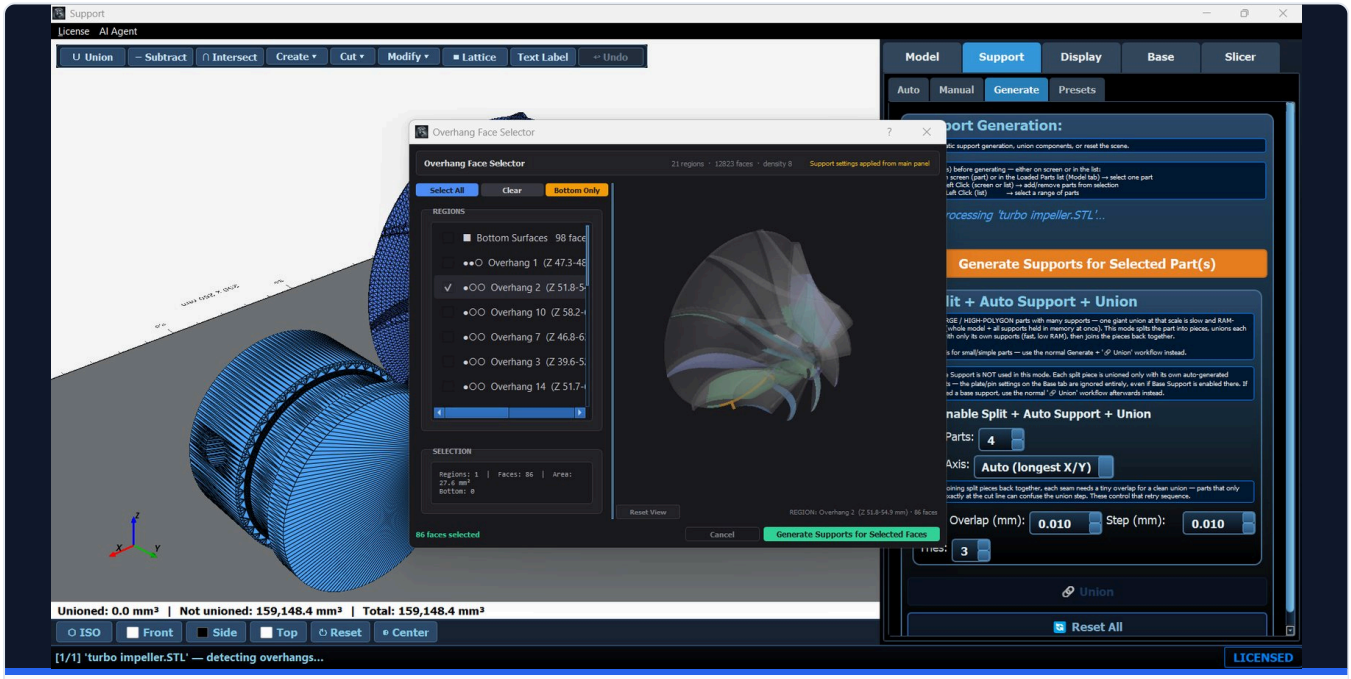
- **Simplify:** ÷2, ÷4 and ÷8 reduce the triangle count by about 50 / 75 / 87.5 %. **Reduce** applies a custom 5–95 % reduction. Edges and overall volume are kept.
- **Refine:** x1 (no change), x2 (about 4× triangles), x3 (about 16×). **Passes** applies 1–4 custom refinement passes.
- **Restore Original** returns the mesh to its first-loaded state.
- Both run in the background. Decimating large meshes before generating makes overhang detection much faster.

04 3D SUPPORT GENERATOR
Generating supports

Supports are placed automatically from detected overhang faces and run down to the build plate or to the lower face of the part.

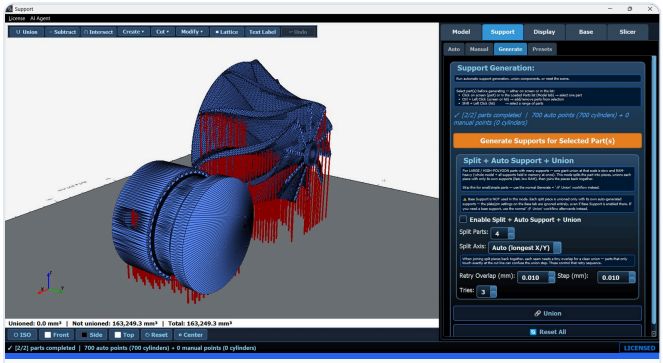
1. **Load and select parts.** Add files in the Model tab. Select by clicking on screen or in the Loaded Parts list; Ctrl + click adds or removes, Shift + click selects a range.
2. **Generate.** Open Support › Generate and press **Generate Supports for Selected Part(s)**. Only selected parts get supports; parts without overhangs are skipped. The status line on the Generate tab and the status bar report the result.
3. **Pick specific overhangs (optional).** Tick **Enable Face Selection** in the Auto tab. The Overhang Face Selector lists the detected regions with checkboxes — Select All, Clear or Bottom Only — then press Generate Supports for Selected Faces.
4. **Edit by hand (optional).** In the Manual tab, select a part, then press Add Mode. Hover over the part: a green dot snaps to the nearest corner point; Ctrl + click places a support there. In Delete Mode, Ctrl + click near a support removes it. Clear Manual, Clear Auto and Clear All remove support sets.
5. **Union.** Press **Union** to join model, supports (and the base plate, if enabled) into one mesh. The volume bar updates. **Reset All** clears the scene after confirmation and returns all settings to defaults.

Overhang Face Selector

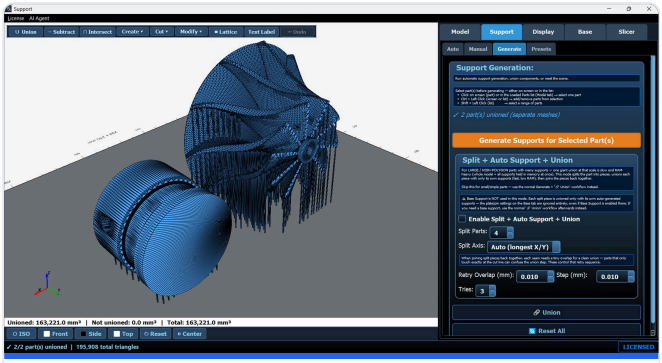


Overhang Face Selector: 21 regions, 12,823 faces. "Overhang 2" is selected (86 faces, 27.6 mm²); the preview on the right highlights the chosen region.

Example: two parts, generate and union

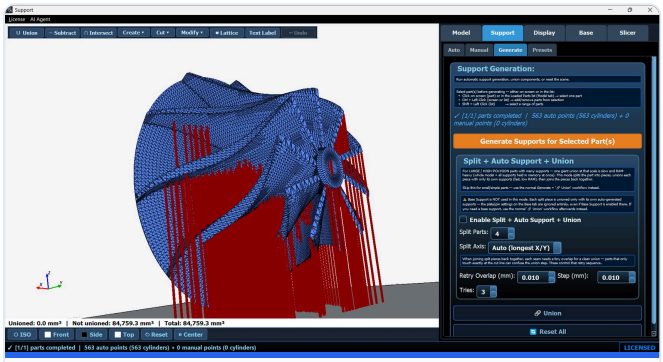


Supports generated for two parts (2/2 parts completed, 700 auto points). The red columns are supports; not yet unioned.

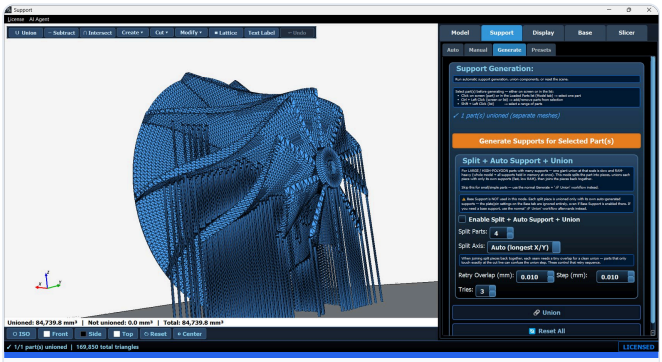


After Union: both parts and their supports are one mesh each; the volume bar shows everything as "Unioned".

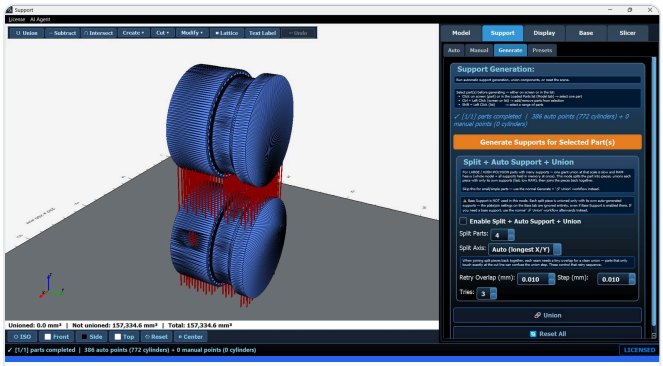
Example: single parts, generate and union



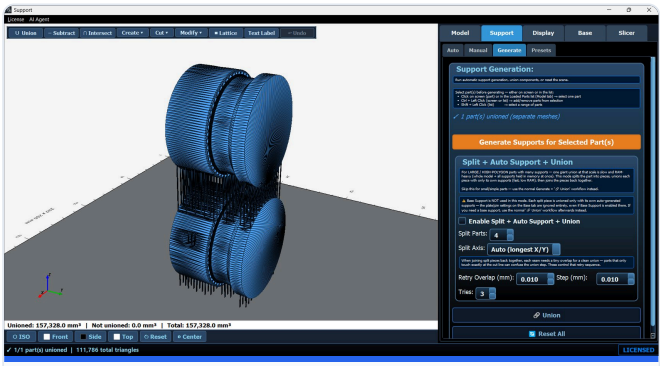
Turbo impeller with 563 auto supports (red); Boundary Offset pulls the support tips inward.



The same part after Union: supports and model are one mesh.



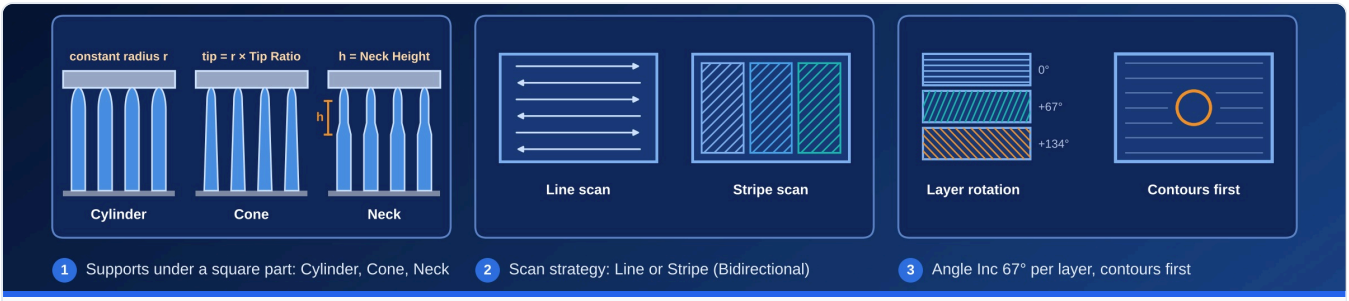
Two parts merged with Z Stack: 386 support points (772 cylinders).



The Z-stacked cylindrical part after Union.

05 3D SUPPORT GENERATOR
Support settings

The Auto, Manual and Base tabs control how supports look and how easily they come off. The Presets tab saves, loads and deletes all settings.



Support types (Cylinder, Cone, Neck), scan strategy (Line and Stripe) and layer rotation with contours first.

Setting	What it controls
Overhang Angle	Faces steeper than this angle receive supports (0°–90°, default 45°; lower = more supports). If nothing is detected, try 30° or 20°. Highlight Overhangs shows detected faces in red.
Min Spacing / Auto Radius	Gap between support points (default 3 mm) and column radius (default 0.4 mm).
Support Type	Cylinder (default, constant radius), Cone (radius shrinks toward the tip) or Neck (full-radius body with a short thin neck under the tip). Used for Auto, Manual and Split + Union supports.
Tip Ratio / Neck Height	Tip radius as a multiple of the radius (0.3–1.0, default 0.6; the tip is never thinner than 0.15 mm). Neck Height is the length of the thin neck (0.3–10 mm, default 1.5). Disabled when the type does not use them.
Boundary Offset	Pulls support tips inward from the overhang edge (0–20 mm, default 0).
Cylinder Count (1–4)	Single, Dual, Triple (triangle) or Quad (square) supports per point. Count and spacing are used exactly as selected. For very many supports, Dual or more can make the final union more reliable.
Cylinder Spacing	Used only when Count is 2, 3 or 4. A multiple of the base radius (default 1.5×) that sets how far each support sits from the support point (the centre).
Indentation	Positive values push the tip slightly into the part (default +0.1 mm); 0 touches exactly; a negative value leaves a gap that makes removal easier.
Stop Mode / Lower Face Indent	Base: columns run to the build platform. Lower Face: columns stop at the next surface below — ideal for hollow or enclosed models.
X / Y Offset	Shifts auto supports outward (positive) or inward (negative) from the model centre.
Vertical Thin Area Supports	On by default. Extra pass for near-vertical fins, blades and thin walls.

Setting	What it controls
Manual settings	Separate radius, count and spacing for manually placed supports. Vertex Snap Radius (0.2–20 mm, default 2 mm) sets how far the green dot searches for a corner point.

Support types in detail

- **Cylinder** — constant radius from the plate (or lower face) up to a rounded tip.
- **Cone** — the radius shrinks steadily from the full radius at the bottom to Radius × Tip Ratio at the top. Stable base and a small contact mark; good for tall supports.
- **Neck** — full-radius body, then a short thin neck right under the tip. It breaks off cleanly and leaves the smallest mark while the body stays strong.
- To see a clear difference, use a larger radius (0.8–1.0 mm) with a ratio of about 0.4. Very thin tips are fragile: raise the ratio or radius if they break during the build.
- A support shorter than twice the Neck Height is built as a plain cylinder.

Cylinder Spacing in detail

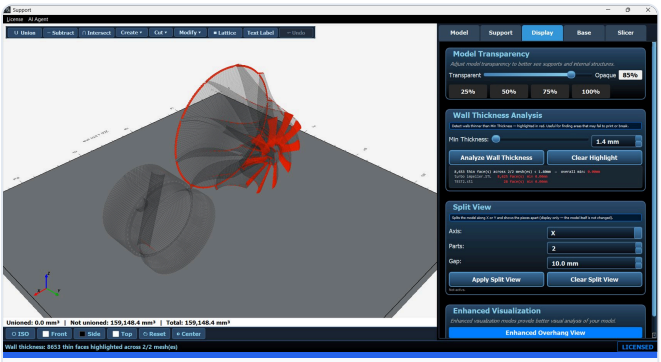
- **Dual** — one support moves left, the other right by the same distance s; centres end up 2 × s apart.
- **Triple** — three supports s from the centre, 120° apart, forming a triangle.
- **Quad** — four supports in the corners of a square around the centre.
- Example: radius 0.4 mm and Spacing 1.5 give s = 0.6 mm. In Dual the centres are 1.2 mm apart and the cylinders 0.8 mm thick, leaving a 0.4 mm gap.
- A small gap gives a stronger, denser support that is harder to remove. A large gap gives separate thin pillars that come off easily but are weaker and take more room on the surface.
- For Cone and Neck the spacing also uses the base radius, so the layout of a multi-support group is identical for all three types.

06 3D SUPPORT GENERATOR
Display and Base tabs

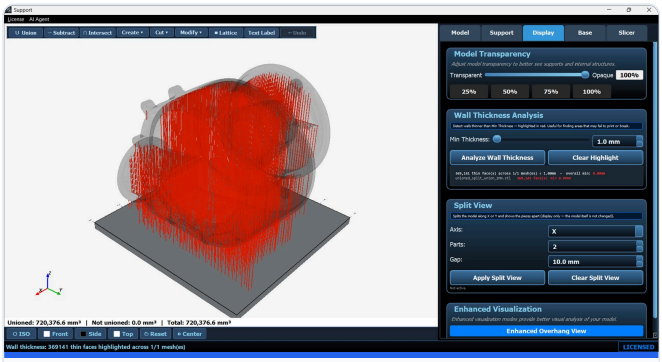
The Display tab changes how the scene looks and runs analyses without changing the model. The Base tab sets the plate or pins that every part sits on.

Display control	What it does
Transparency (10–100 %)	Opacity of model, parts and supports together; presets 25 / 50 / 75 / 100 %.
Enhanced Overhang View / Normal View	Highlights every detected overhang face in red, dims the rest and reports the face count. Normal View restores standard shading.
Split View	Cuts every mesh along X or Y into 2–16 equal slabs and shows them apart (Axis, Parts, Gap). Display only; the model is not changed. The cut is open, so hollow parts and lattices stay visible. Clear Split View restores the scene.
Analyze Wall Thickness	Marks walls thinner than Min Thickness in red on every mesh in the scene and summarises the thin faces and the smallest thickness found. Min Thickness runs from 0 to 2000 mm and starts at 0, where nothing is flagged — choose a value first. Clear Highlight removes the overlay.

Wall thickness analysis

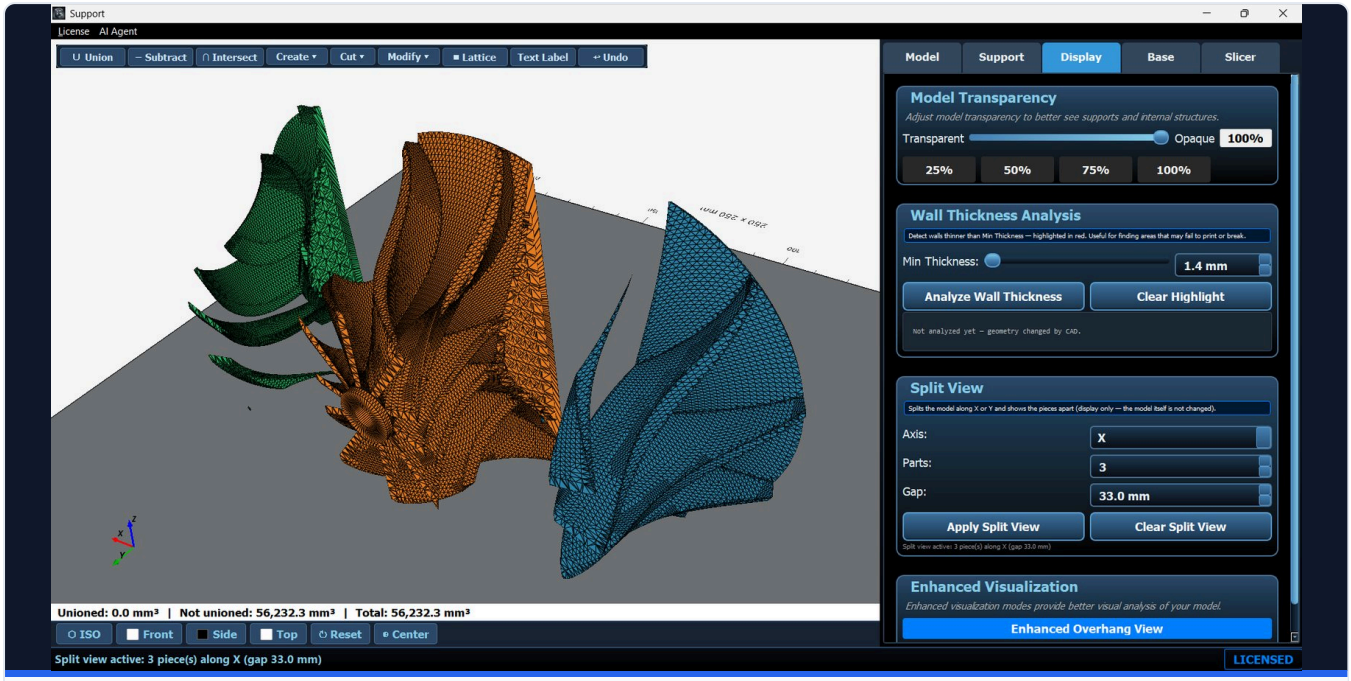


Analysis on two parts without supports (Min Thickness 1.4 mm): thin faces in red, model semi-transparent. The panel below lists thin faces per part.



Analysis on a unioned model (Min Thickness 1.0 mm): thin support columns are flagged as well. To inspect the model itself, run the analysis before adding supports.

Split View

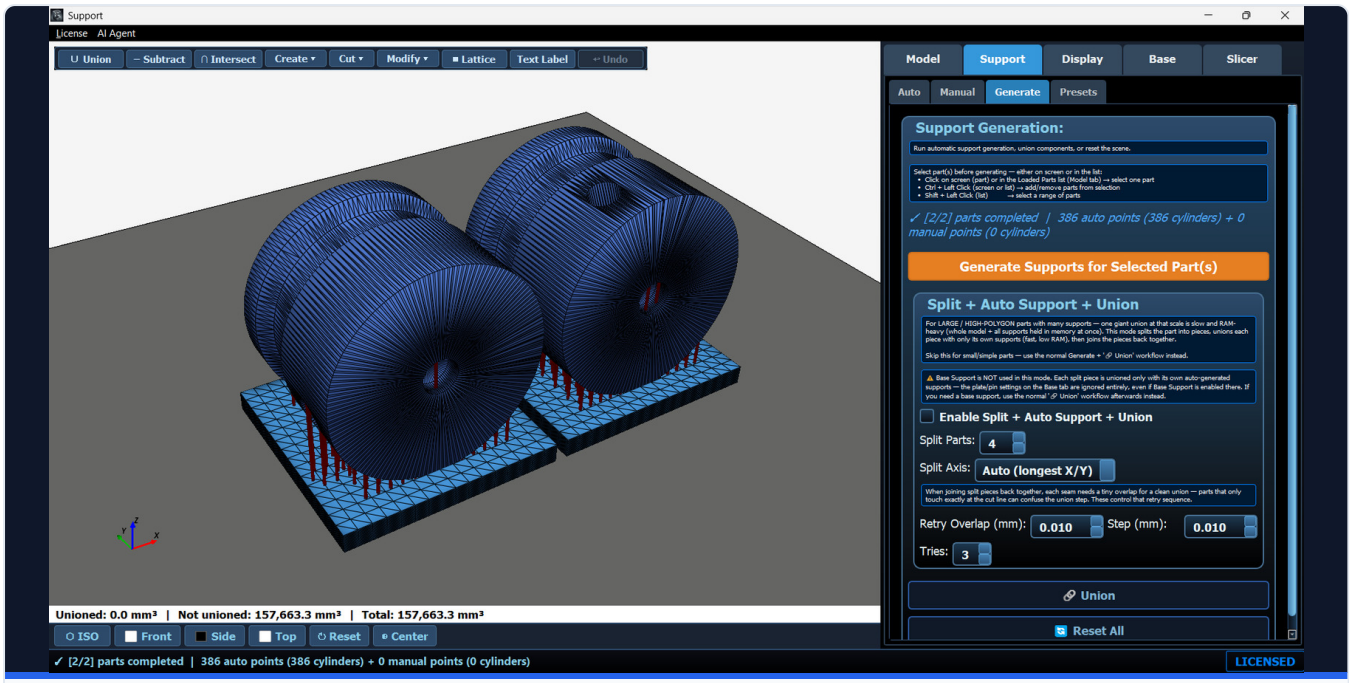


Split View: the impeller shown as 3 pieces along X with a 33 mm gap, each piece in a different colour.

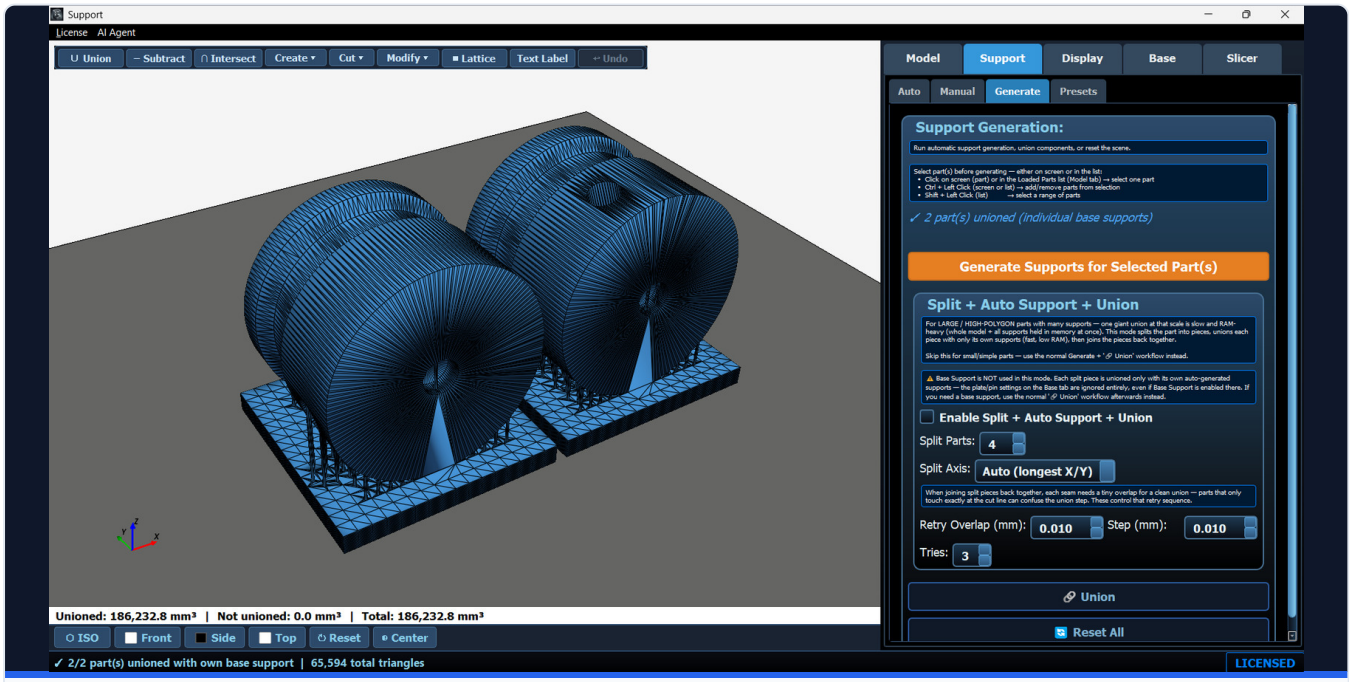
Base Support

Base settings are global: enabling Base Support or changing Type, Thickness, Z Height or Shape affects every loaded part, including parts added later. Each part gets its own automatically sized plate (or pin array); there is no manual plate size.

Base setting	What it does
Enable Base Support	Turns the base on or off for all parts.
Type	Normal Base Support (default): solid plate with a Thickness control. Pin Base Support: an array of small cylinders.
Pin settings	Pin Radius, Pin Tip Height, Pin Stem and centre-to-centre Pin Spacing. Spacing is raised automatically if pins would overlap or exceed 10,000.
Plate size	Automatic per part: 1 mm margin, 50–500 mm. (The gray Build Plate Size in the Model tab is a separate display setting.)
Z Height / Shape	Z of the base top surface, shared by all plates (−1 / −0.1 / +0.1 / +1 buttons or Reset Z). Shape: square or circle.



Base Support on: each part stands on its own tight-fit plate, with 386 supports generated.



After Union: each part is joined with its own base support, 2/2 parts unioned.

Base Support is used in the normal Generate + Union workflow. It is not used in Split + Auto Support + Union.

07 3D SUPPORT GENERATOR
CAD tools

The toolbar in the top-left corner of the Support view offers CAD-style editing for manufacturing preparation, before supports and slicing.

Tool	What it does
Union	Joins two or more bodies into a single solid.
Subtract	First selected part minus all other selected parts. The result replaces the first part.
Intersect	Keeps only the volume where the selected bodies overlap.
Create (menu)	Cube, Cylinder or Sphere, added as a new part at the XY origin with its base at Z = 0.
Cut (menu)	Cut by Plane (Preview or Closed), Cylindrical Hole and Box Cut.
Modify (menu)	Hollow, Offset, Convex Hull, Linear Array, Mirror, Scale, Repair / Clean, Split Bodies.
Lattice	Hollows a part and fills the inside with a lattice, with a 3D preview.
Text Label	Engraves text into a chosen face of the part.
Undo	Reverts the last operation (up to 20 steps); supports are not restored.

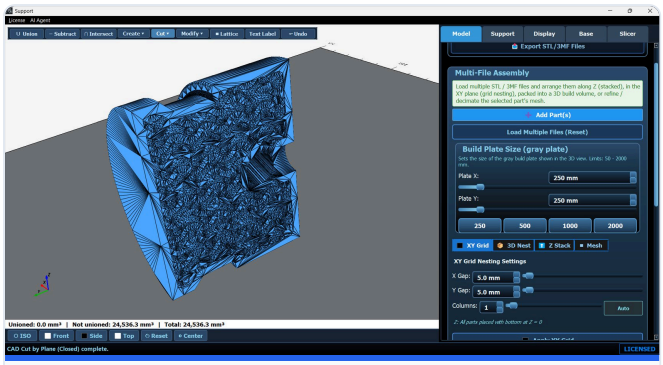
Recommended order

1. **Repair / Clean** — make the mesh closed and clean.
2. **Shape** — Hollow, Lattice, Offset, Scale, Mirror, Array.
3. **Cut and mark** — Cut, Boolean operations, Text Label.
4. **Supports** — Generate, then Union.

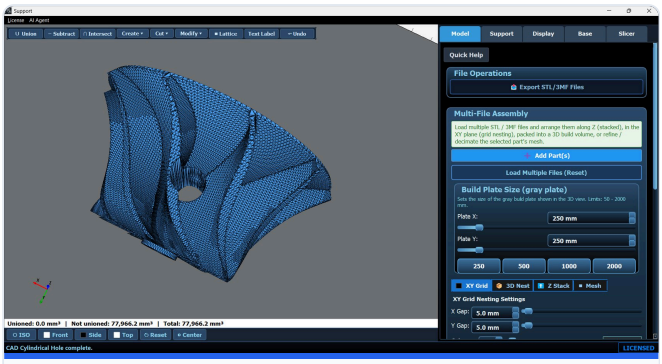
Select the part(s) in the Loaded Parts list first; most commands act on every selected part. Every CAD operation deletes the supports, and Undo does not restore them. Boolean, hollow, offset and lattice operations need closed meshes — run Repair / Clean first if a part is rejected.

Cut tools

- **Cut by Plane (Preview)** — normal axis (X / Y / Z) and the plane offset from the part centre in mm (0 = middle). An open inspection cut; Undo restores the part. Undo it before Boolean, Hollow or Offset.
- **Cut by Plane (Closed)** — the same settings, but the cut face is capped: a closed, printable solid. Keep Above, Below or Both.
- **Cylindrical Hole** — axis, diameter, depth (0 = through the whole part) and two offsets from the part centre.
- **Box Cut** — removes a box of the given size at an offset from the part centre.



Result of Cut › Cut by Plane (Closed): the cut face is capped and the part is a closed solid.



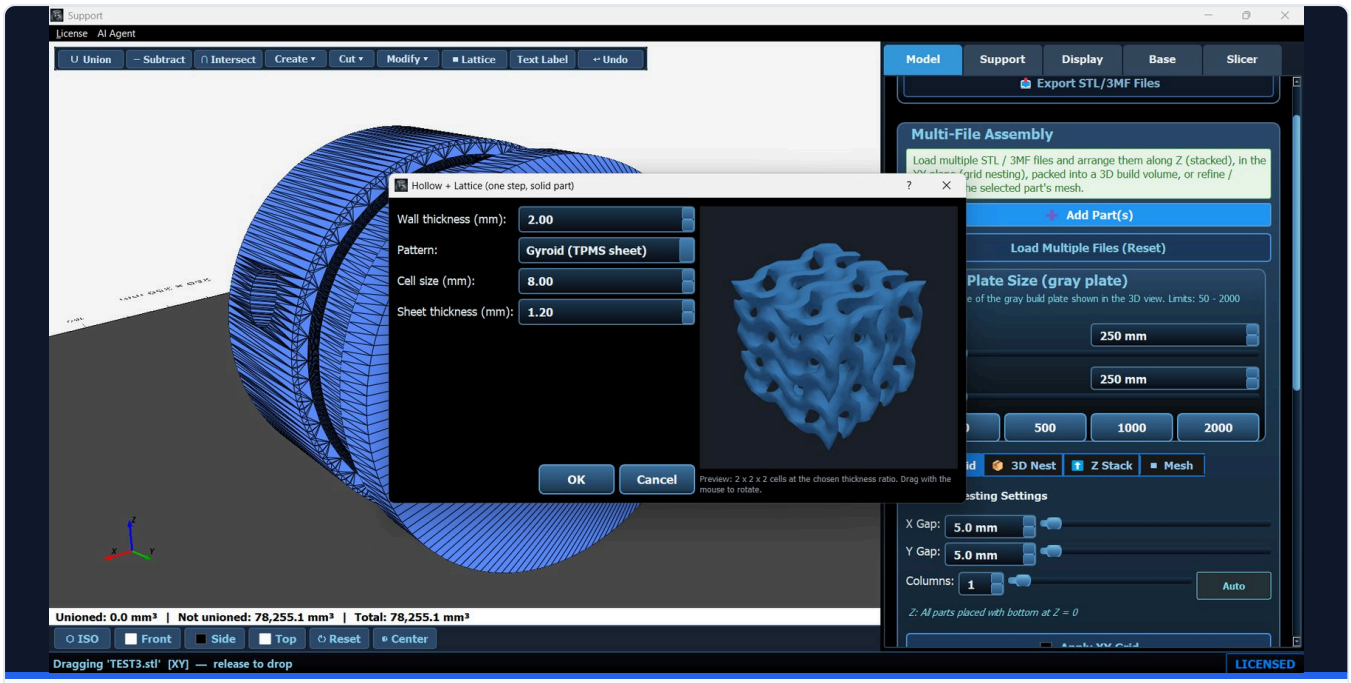
Result of Cut › Cylindrical Hole through the hub of the impeller.

Modify menu

Command	What it does	Settings
Hollow (Shell)	Removes the inside and leaves a wall of the given thickness; the wall must be less than half the thinnest section.	Wall thickness (mm)
Offset / Grow-Shrink	Moves every surface outward (positive) or inward (negative); useful for fit tolerances.	Distance (mm)
Convex Hull	Wraps the selected part(s) in their convex hull; several parts become one.	—
Linear Array	Repeats the part along one axis, as one joined part or as separate parts.	Axis, copies (2–100), spacing
Mirror	Mirrors each part about its own centre.	Direction X / Y / Z
Scale	Scales X, Y and Z independently; the bottom stays on the plate.	Scale X / Y / Z (%)
Repair / Clean	Repairs the part with the same steps as the STL Repair tool, only where problems are found.	—
Split Bodies	Separates disconnected shells into individual parts.	—

Lattice — hollow and fill in one step

On a solid part, the Lattice button makes the wall and fills the inside with a lattice in one step. The dialog shows a 3D preview of the chosen pattern that you can rotate with the mouse.



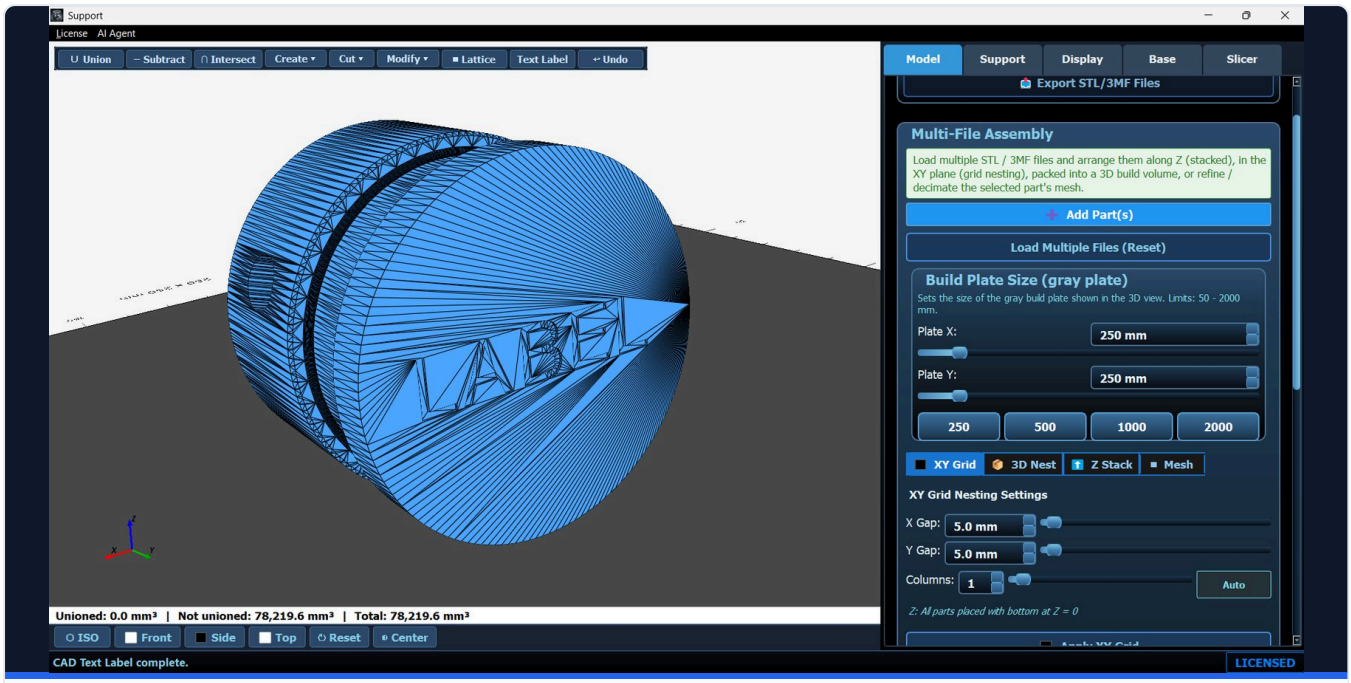
Hollow + Lattice dialog: Gyroid (TPMS sheet), wall 2.00 mm, cell size 8.00 mm, sheet thickness 1.20 mm; the preview shows 2 × 2 × 2 cells.

Pattern	What it is	Good for
Cubic grid	Square grid of struts along X, Y and Z	Simple, predictable infill
BCC	Diagonal struts from each cell centre to its 8 corners	Stiffer than the cubic grid
Gyroid	Smooth, continuous sheet with no corners or nodes	Powder bed and metal; self-supporting
Schwarz-P	Sheet aligned to the cube axes, open straight channels	Light parts, easy powder removal
Diamond	Denser sheet that follows the diamond crystal pattern	Higher fill and strength

- Use Lattice on the original, un-hollowed solid part (undo any earlier Hollow first).
- If too many cells would be needed, the cell size is increased automatically and you are told the new value.
- It needs a lot of memory: on big parts use a larger cell size and apply it before supports and Union.

Text Label — engrave text into a face

Text Label engraves a text into the chosen face of every selected part — for part numbers, versions or marks.



Text Label result: the text is engraved into the face of the part.

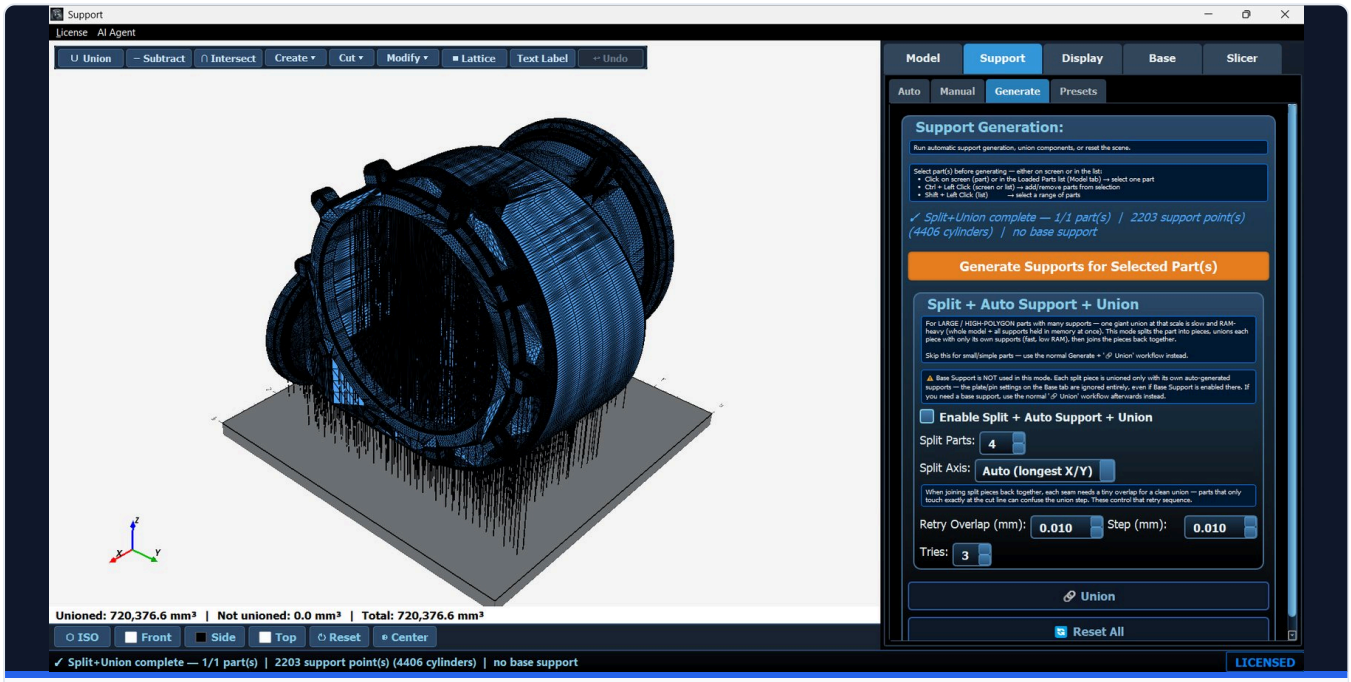
Setting	What it does
Text	The text to engrave (one line; basic Latin letters, digits and symbols).
Face	+Z (top), −Z (bottom), +X, −X, +Y or −Y. The text reads correctly when you look at that face from outside.
Text height (mm)	Height of the capital letters.
Engrave depth (mm)	How deep the text goes into the surface; must be smaller than the part thickness (default 0.4).
Offsets (mm)	Move the text from the face centre, along and across the text direction.
Rotation (deg)	Turns the text in the plane of the face.

For printing, keep the text at least 6–8 mm high and about 0.5–1 mm deep. If the text does not fit on the face, you are asked for a smaller height, a shorter text or another offset.

08 3D SUPPORT GENERATOR
Large parts: split + union

★ Key feature — large-part union. One giant union of a big model plus thousands of supports is slow and memory-heavy. Split + Auto Support + Union cuts the part into pieces, generates supports on each piece, unions each piece with only its own supports and then joins the pieces back together.

1. **Enable.** Tick *Enable Split + Auto Support + Union* in Support › Generate, below the Generate button. Because this mode generates its own supports, all existing supports (auto and manual) are removed after you confirm.
2. **Set the split.** Split Parts (2–16) and Split Axis: Auto (longest of X / Y), X or Y. Z is not offered because support columns would cross the cut plane.
3. **Set the retry sequence.** Each seam needs a tiny overlap for a clean union: Retry Overlap (0.010 mm), Step (0.010 mm) and Tries (3; 1–8).
4. **Generate.** Press Generate Supports for Selected Part(s). All Auto-tab settings are used exactly as selected. The status line says "Split+Union complete"; the result parts are added to the list under a new name.



Split + Union complete: 1/1 part, 2,203 support points (4,406 cylinders), no base support. Total volume 720,376.6 mm³, all "Unioned".

Base Support note

Base Support is not used in this mode — plate and pin settings on the Base tab are ignored. If you need a base plate, use the normal Generate + Union workflow. Skip Split + Union for small or simple parts.

Union (normal workflow)

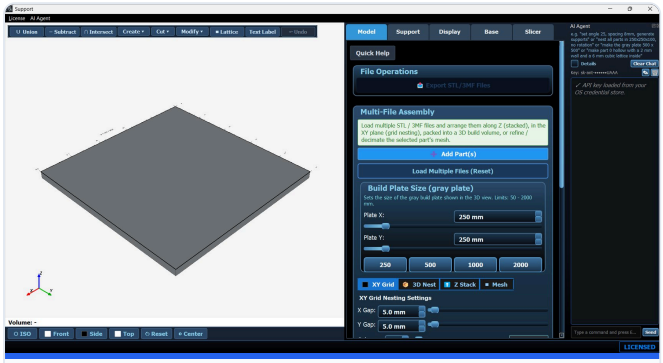
Union combines model and supports — and, when Base Support is on, a tight-fit base plate per part — into one solid mesh. Several union methods are tried in turn so that complex or imperfect geometry still unions. Export the result as STL or 3MF, or use **Send All to Slicer** in the Slicer tab (union and finish CAD work first).

Recommended workflow

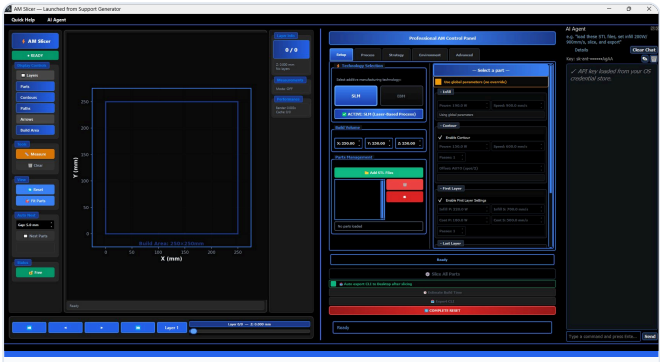
1. Model tab: set Build Plate Size if needed, then load or add parts.
2. Arrange with XY Grid, 3D Nest or Z Stack.
3. Simplify or refine the selected part in the Mesh tab.
4. Rotate the parts into print orientation.
5. Do CAD work (Repair / Clean, hollow, lattice...) before supports.
6. Check wall thickness and inspect with Split View.
7. Set the Auto tab (45° is a good start).
8. Select parts and generate (Split + Auto Support + Union for large parts).
9. Check with Enhanced Overhang View; add or delete supports manually if needed.
10. Base tab: enable Base Support (Pin recommended) and set the Z height.
11. Union.
12. Export or send to the slicer.

09 PLAIN-LANGUAGE CONTROL
AI Agent

Every module — STL Repair, Support, SLM/EBM, DED, FFM, Concrete and ERP — has an AI Agent. Open it from the menu bar (AI Agent; Ctrl + Shift + A in the Support module) to dock a chat panel on the right, type what you want, and the agent applies the settings and runs the step.



AI Agent panel docked in the Support module; type a command in the box at the bottom.



The same panel in the SLM/EBM slicer, for example "load these STL files, slice, and export".

1. **Open the panel and add your key.** On first use, if no key is found, paste your API key into the field at the top of the panel and save it. The key is stored securely on your computer and is never shown as plain text; once active, only a masked version is displayed.
2. **Type a command.** Examples: "set angle 25, spacing 8 mm, generate supports"; "nest all parts in a 250 × 250 × 100 volume with 3 mm gap"; "make part 0 hollow with a 2 mm wall and a 6 mm cubic lattice inside". Press Enter or Send.
3. **Let it work.** The agent checks the scene, changes settings, selects parts, runs the step and reports what it did. Tick **Details** to see each tool call; **Stop** ends a run; **Clear Chat** resets the conversation.

What the Support-module agent can do

- **Settings** — any numeric setting, checkbox and option list; support presets (list, save, load, delete).
- **Actions** — generate, clear supports, union, reset, export, send to slicer, wall-thickness analysis, grid / stack / nest and their undo, split view, delete or select parts, rotate, mesh operations.
- **CAD** — union, subtract, intersect, hull, create, cut by plane, text label, hole, box cut, hollow, offset, hollow + lattice, array, mirror, scale, repair, split bodies and undo.
- **See the view** — takes a live screenshot and describes it; reports parts, supports and settings.

Things to know

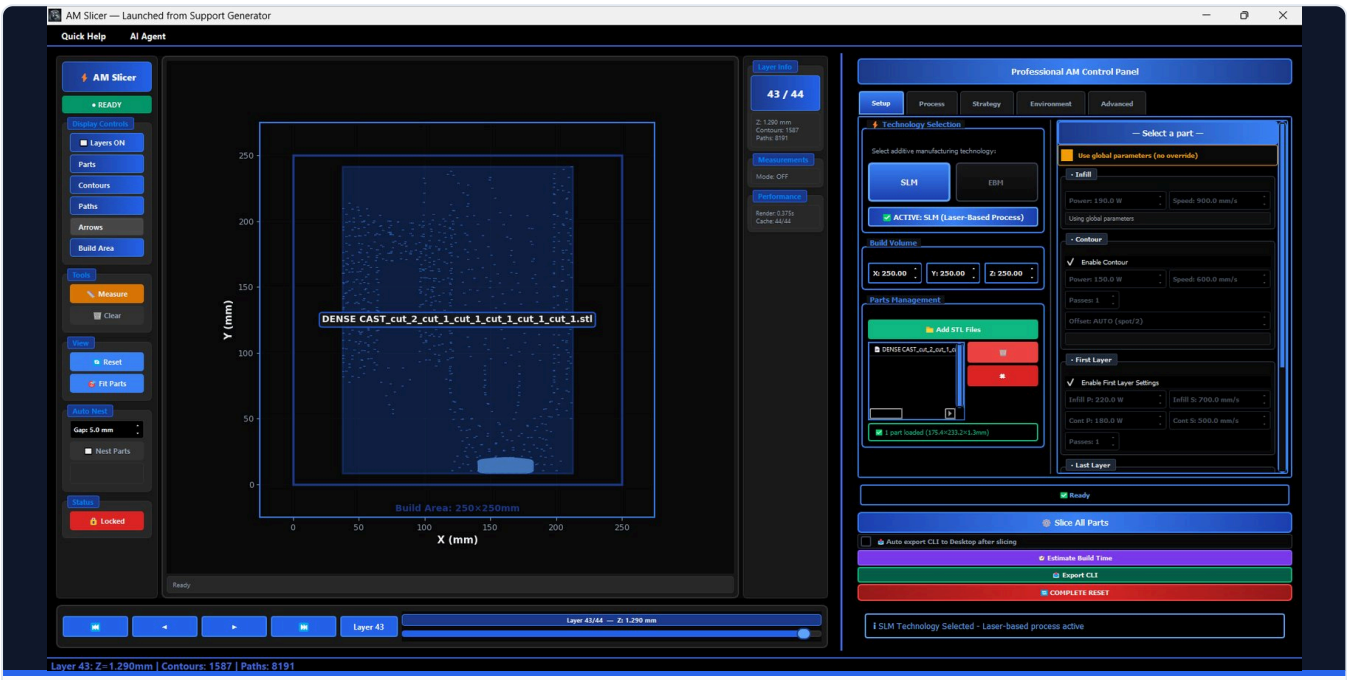
- Only a full reset (Reset All in Support, Complete Reset in the slicers) asks first; everything else runs from start to finish without asking.
- Export, Send to Slicer and file-load dialogs open the normal dialogs.
- The agent cannot place manual supports (you Ctrl + click); it can only arm Add / Delete mode.
- In multi-part scenes, make sure the right part(s) are selected first.

In the slicers (SLM/EBM, DED, FFM, Concrete) the agent can list and change settings, apply presets, load files, select, move and rotate parts, set the build volume, slice, estimate build time, export and jump to a layer. In the ERP it selects the technology.

10 SLM/EBM · DED · FFM · CONCRETE
Slicers

SLM / EBM Slicer

Opens from the Support module's Slicer tab or on its own. Nest several parts on one plate, give each part its own parameters and preview every layer before export.



AM Slicer: layer 43 of 44. View controls on the left, layer preview in the middle, Professional AM Control Panel on the right.

1. **Choose the technology.** Setup › Technology Selection: SLM (laser) or EBM (electron beam).
2. **Set the build volume.** Enter X / Y / Z (250 × 250 × 250 mm in the sample).
3. **Add parts.** Add STL Files (Ctrl + O) in Parts Management. Each entry shows its size; the red buttons remove or clear.
4. **Nest.** Set the Gap (5.0 mm in the sample) and press Nest Parts.
5. **Set parameters.** Leave *Use global parameters* ticked, or untick it and set Infill, **Contour (with multi-contour Passes)**, First Layer and Last Layer values per part. The Process, Strategy, Environment and Advanced tabs hold further settings.
6. **Choose the scan strategy.** Strategy tab: Line Scan or Stripe Scan (see Scan strategy).
7. **Slice and review.** Press Slice All Parts, then scrub with the layer slider or type a number in the Layer box and press Enter. Toggle Layers, Parts, Contours, Paths, Arrows and Build Area; Measure checks distances. Parts stay locked until Complete Reset.
8. **Estimate and export.** Estimate Build Time, then Export CLI (Ctrl + E). *Auto export CLI to Desktop after slicing* is ticked by default and saves the file to your Desktop; untick it to export manually.

Layer zones — Infill, Contour, bottom and top

Each zone has its own power and speed. Open the Process tab and set them; untick *Use global parameters* to give one part its own values.

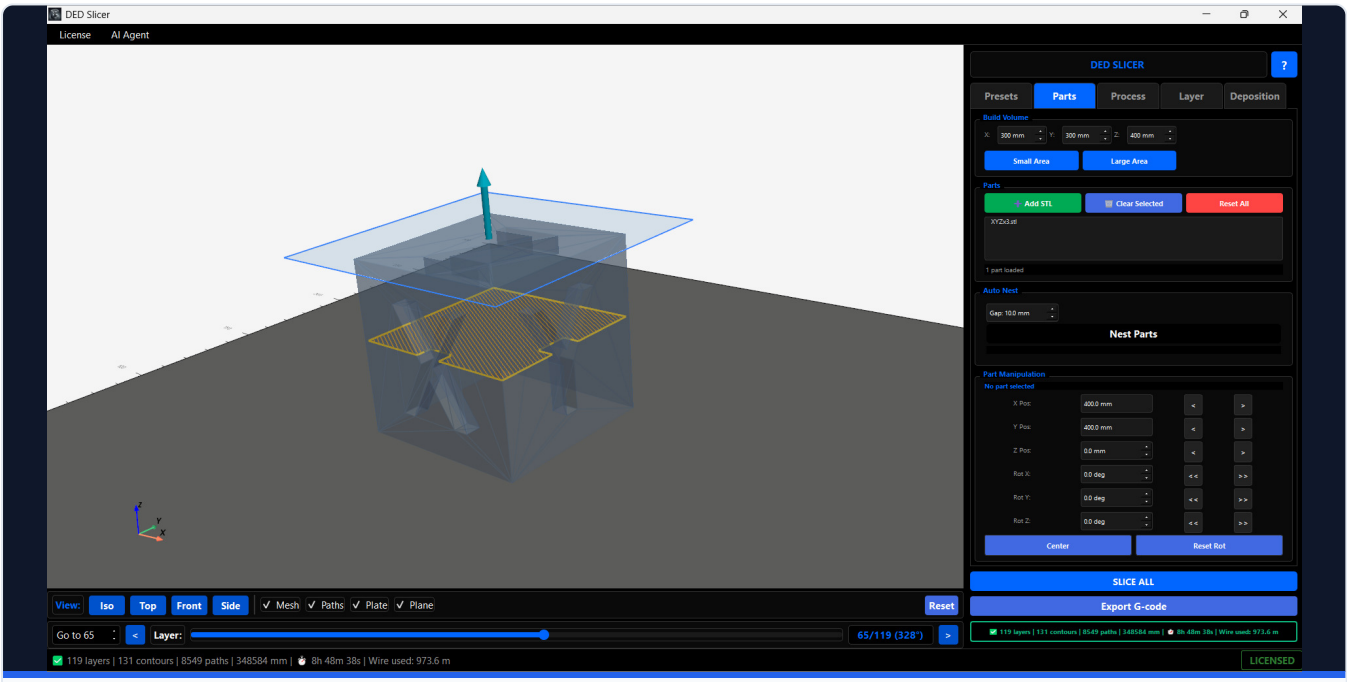
Zone	Applies to	Settings
Infill	All layers	Power and speed
Contour	Outline of every layer	Power, speed and Passes (1–10); Enable Contour switches it on or off
First Layer (bottom)	Layer 1	Own infill power / speed and own contour power / speed / Passes
Last Layer (top)	Final layer	Own infill power / speed and own contour power / speed / Passes

★ Key feature — multi-contour slicing. In the Contour group, Passes (1–10) scans every contour several times; the First Layer and Last Layer groups have their own contour Passes. Contour power, speed and offset can be set separately from the infill, and the contour can be switched off with Enable Contour.

Slicing and export run in separate processes, so the window stays responsive. Process presets are managed with Save / Load / Delete; "Default SLM" and "Default EBM" are included. Shortcuts: Ctrl + O add files, Ctrl + S slice, Ctrl + E export CLI, Ctrl + Shift + R complete reset, F1 Quick Help.

DED Slicer

Laser / e-beam DED (wire or powder) and arc-based WAAM, in 3 or 4 axes, exporting 4-axis G-code (X / Y / Z / B). Tabs: Presets, Parts, Process, Layer, Deposition.



DED Slicer: the part sliced into 119 layers (layer 65 shown). The blue arrow and plane mark the current layer.

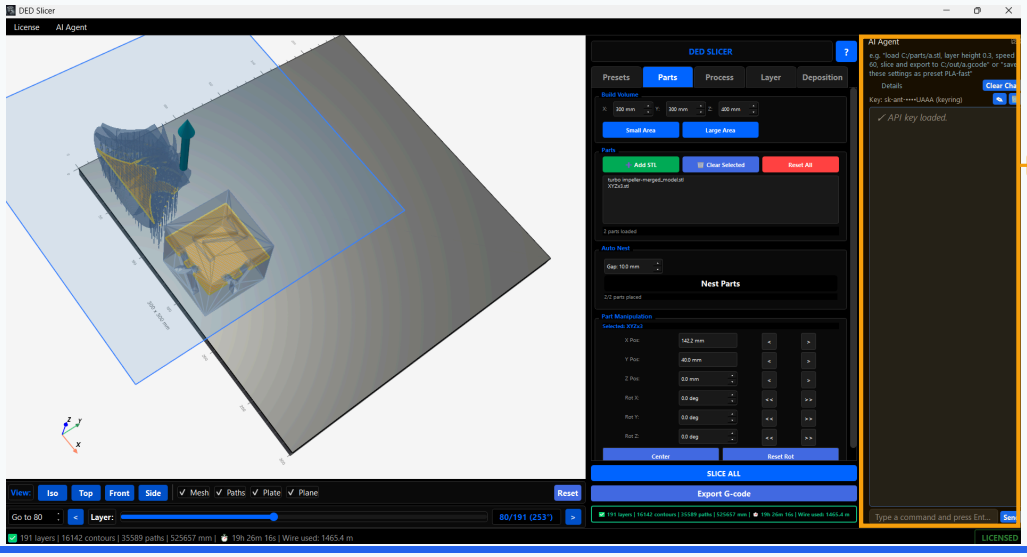
1. **Process and feeding.** Process: DED (Laser / e-Beam) or WAAM (Wire Arc). Feeding: Wire or Powder (powder is disabled in WAAM). Build X / Y / Z updates the 3D build volume as soon as you enter a value.
2. **Slicing orientation.** Horizontal, Tilted X / Y / XY, or Belt DED (default 45°). Z is always absolute; the B axis only moves between layers, in Belt mode.
3. **Parts and position.** Add STL / 3MF, then drag the part in the 3D view; rotation, Center, Reset Rot.

4. **Parameters and slice.** Infill, Contour, Upskin, Downskin zones and Layer Configuration, then SLICE ALL and Export G-code.

Parameter	What it does
Process type	DED: power (W) and spot diameter. WAAM: Voltage, Current and WFS; choosing WAAM forces wire feeding and shows the WAAM Arc Parameters panel.
Contour Offset	Compensates melt-pool width. AUTO (0) = spot diameter ÷ 2; a value above 0 is a fixed offset in mm. Outer contours shrink inward, hole contours grow outward. In WAAM, enter a manual value (about bead width ÷ 2).
Hatch and Contour Gap	Hatch is the line spacing (default 1.2 mm) and is used exactly as entered. Contour Gap is the distance between the offset contour and the start of the infill; AUTO (0) = Hatch ÷ 3.
Deposition zones	Four zones, each with its own power, speed and feed rate and an **On** checkbox: Downskin = first layer (bottom), Infill = middle layers, Upskin = last layer (top), and Contour = the outline, which runs before the infill. In WAAM the power fields are informational only.
Arc Mode (WAAM)	CMT (low heat, thin walls), Pulse (controlled droplet transfer), Short Arc (low heat, thin sections), Spray Arc (high deposition, bulky sections).
Voltage / Current / WFS	Arc power (W) = voltage × current, shown live. WFS is the wire feed speed in m/min. Weaving adds a sinusoidal oscillation.

Layer thickness: WAAM typically 1.5–4 mm, laser DED 0.2–1 mm. Time estimates ignore acceleration — expect builds to take 10–20 % longer. Reset All restores every setting to default and removes the parts; Clear Selected removes only the selected parts.

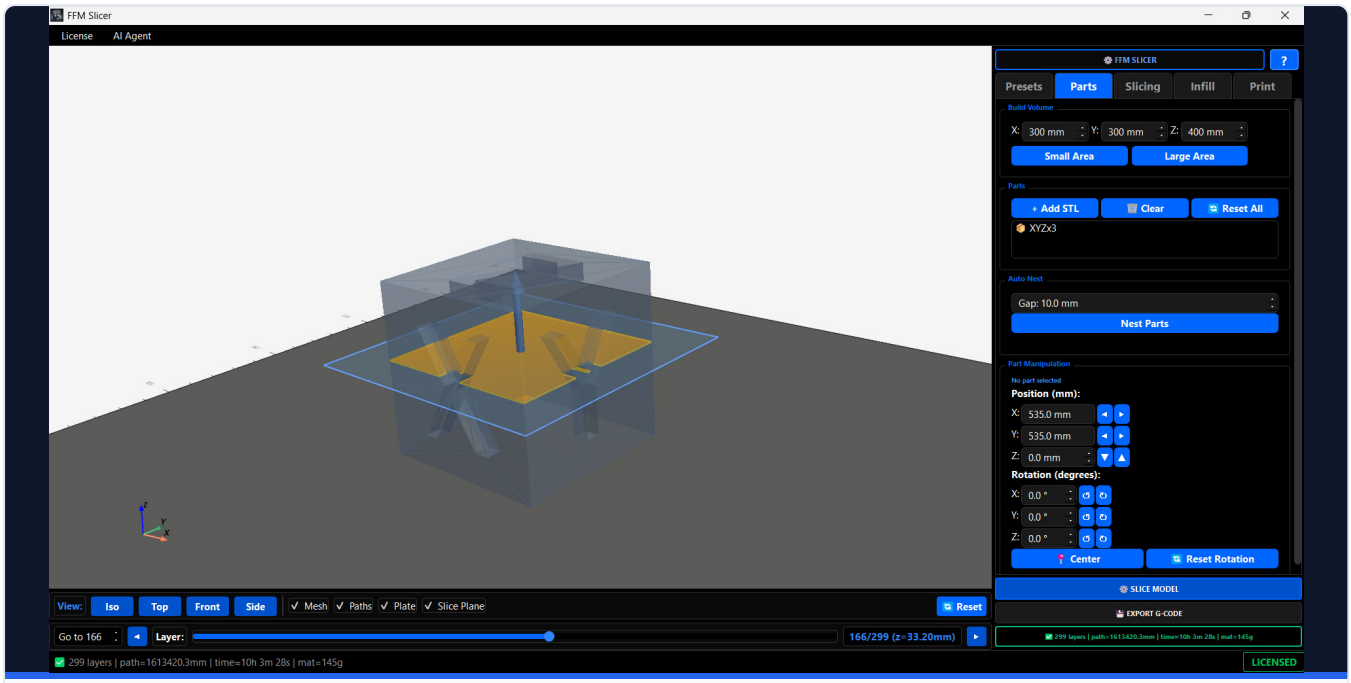
Example: DED Slicer, two parts sliced



DED Slicer example: turbo impeller and a test part nested on the 300 × 300 × 400 mm build volume; 191 layers, 19 h 26 min, 1,465.4 m of wire (layer 80). The AI Agent panel (orange) is docked on the right.

FFM Slicer — filament and pellet

Large or changing-table-size polymer parts in 3 or 4 axes, with three extrusion modes and nozzle-compensated contours. Tabs: Presets, Parts, Slicing, Infill, Print.



FFM Slicer: 299 layers, 1,613 m path, 10 h 3 min. Build volume (300 × 300 × 400 mm), parts list and position / rotation controls on the right.

1. **Build volume.** X / Y / Z, or the Small Area (300 × 300 × 400) and Large Area (1070 × 1070 × 1118) presets.
2. **Parts and manipulation.** + Add STL / 3MF, Clear, Reset All; drag parts in the 3D view; rotation, Center, Reset Rotation.
3. **Slicing mode.** Horizontal; Tilted X / Y / XY (−89° to +89°; above about 60° bed adhesion may suffer); Belt FFM.
4. **Extrusion and slice.** Choose the extrusion mode, then SLICE MODEL and EXPORT G-CODE.

Extrusion mode	How it works
Filament	Classic linear E axis in millimetres of filament, for desktop and belt filament printers.
Pellet — Virtual axis (recommended)	Computes the axis value like filament mode, using a virtual diameter you set. Matches most pellet retrofits.
Pellet — Direct volumetric	Writes the raw volume in cubic millimetres with no diameter conversion. Correct only if your controller reads the axis that way.

You must calibrate pellet output

The software cannot know your machine's steps per millimetre or axis letter. Before a real print, run a short calibration move, weigh the output and adjust the virtual diameter until the numbers match.

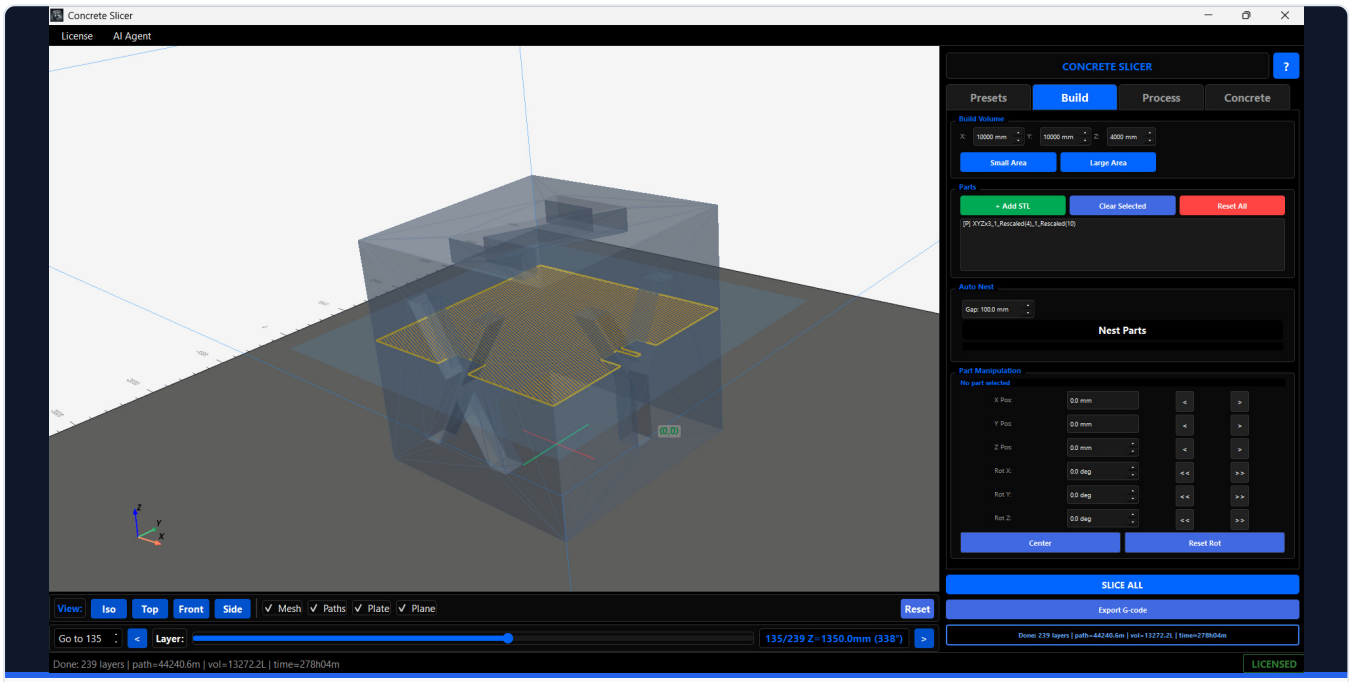
Setting	What it does
Strategy / density	LINE_SCAN (whole polygon) or STRIPE_SCAN (stripes first, for thermal stress on very large parts). Density guide: 5–10 % decorative, 15–20 % standard, 30–40 % functional, 50–100 % maximum strength.
Contour Offset	Compensates the extruded line width. 0 = AUTO = nozzle diameter ÷ 2.
Contour Gap	How far inside the compensated contour the infill starts. Enter 0 (AUTO) at pellet scale.

Setting	What it does
Quality	Pellet scale: layer height 0.5–5 mm, line width 2–9 mm, close to the nozzle diameter.

Speed zones: FFM has one Speed field for the infill; the contour automatically prints at 80 % of it. There are no separate first-layer (bottom) or last-layer (top) settings, so the bottom layers use the same speeds. Verify the exported G-code against your controller before use.

Concrete Slicer

Large-format concrete slicing with wall, infill, foundation and top passes. Tabs: Presets, Build, Process, Concrete.



Concrete Slicer: 10000 × 10000 × 4000 mm build volume, 239 layers, 278 h, layer 135 shown. Yellow paths are walls.

1. **Build volume and strategy.** Build X / Y / Z appears as a wireframe box with origin and corners labelled, and updates live.
2. **Parts.** + Add STL / 3MF (several at once); select by name or click; drag parts in the 3D view; Center, Reset Rot, Reset All.
3. **Layer and process settings.** Layer H, Line W, Nozzle, Wait, Infill Gap, Wall Offset, Bidirectional and stripe settings; Flow, Speed and Pressure for four passes.
4. **Slice and export.** SLICE ALL, review with the layer slider, then Export G-code. The summary shows layers, contours, paths and file size.

Strategy	What it does
LINE_SCAN	Evenly spaced straight infill lines; the direction turns each layer for better bonding.
STRIPE_SCAN	The layer is divided into parallel stripes, each filled independently — for very long or large flat shapes.
CONTOUR_ONLY	Only the outer wall outline on every layer; for thin-walled shapes and test prints.
CONTOUR_PARALLEL	Rings following the wall: Contours = ring count, Amplitude = waviness (0 = smooth), Frequency = waves per ring.

- **Wall Offset** compensates bead width; AUTO (0) = nozzle ÷ 2.
- **Wait** is the pause between layers so the concrete can firm up: too short may sag, too long slows the job.
- **Process passes:** each of the four passes has its own Flow, Speed and Pressure and an **On** checkbox. Wall and Infill run on every layer except the first and last; Foundation (bottom) is the first layer only; Top is the last layer only.
- **Preview:** yellow = wall paths, orange = infill, pale blue square = current layer plane. Mesh, Paths, Plate and Plane toggle separately.
- **Troubleshooting:** sagging — increase Wait; rough shape — reduce Layer H; SLICE ALL greyed out — add a visible part.

QUICK GUIDE · ALL SLICERS

11 Parameter tuning

Start from the defaults below, change **one setting at a time** and judge the result on a small test part. The values are the factory defaults of each slicer; the tips are rules of thumb, not machine-specific guarantees.

SLM / EBM Slicer

Setting	Default	How to tune
Infill power / speed	SLM 190 W / 900 mm/s · EBM preset 250 W / 1200 mm/s	Energy density = power ÷ (speed × hatch × layer). Raise power or lower speed for more energy; do the opposite for less.
Layer / hatch / spot	Layer 0.030 mm (EBM preset 0.050) · hatch 0.10 mm · spot 0.08 mm	Thicker layers build faster but need more energy. Keep hatch close to the spot size so tracks overlap.
Contour	150 W / 600 mm/s, 1 pass (EBM preset 200 W / 800 mm/s)	Slightly less energy than the infill. Add passes (up to 10) for a smoother surface.
First / last layer	First 220 W / 700 mm/s · last 170 W / 800 mm/s	First layer a little hotter for adhesion; last layer cooler for a clean top skin.
Offsets	Contour offset AUTO = spot ÷ 2 · infill offset AUTO = hatch ÷ 4	Leave on AUTO; enter a value only to correct measured part size.
Scan	Line Scan · start 67° · increment 67° · bidirectional · stripe 15 mm	Switch to Stripe Scan on large layers to spread heat.

DED Slicer

Setting	Default	How to tune
Layer / hatch / spot	0.5 mm / 1.2 mm / 1.5 mm	Layer thickness should match the bead height you actually get; hatch is the line spacing and is used exactly as entered.
Zones	Infill 1500 W / 15 mm/s · Contour 1200 W / 12 mm/s · Upskin 1300 W / 13 mm/s · Downskin 1400 W / 10 mm/s	Downskin (first layer) runs slower for adhesion; upskin (last layer) a little cooler. Change power and speed together.
Offsets	Contour offset AUTO = spot ÷ 2 · contour gap AUTO = hatch ÷ 3	Keep AUTO; for WAAM enter about half the bead width.
Feed	Wire Ø 1.2 mm · standoff 10 mm · shield gas 15 · carrier gas 5	Match wire diameter and standoff to your head.

Setting	Default	How to tune
WAAM arc	22 V · 180 A (= 3,960 W) · WFS 6 m/min · CMT	Arc power = voltage × current. Pick the arc mode for the part: CMT / Short Arc for thin sections, Spray Arc for bulky ones. Interpass temperature (150 °C) is written to the file header for information.
Orientation	Horizontal · belt angle 45° · tilt 0°	Use Tilted or Belt only if the machine really moves that way.

FFM Slicer

Setting	Default	How to tune
Layer / line / nozzle	0.2 / 0.4 / 0.4 mm (pellet scale: layer 0.5–5 mm, line 2–9 mm)	Keep line width close to the nozzle diameter; layer height well below it.
Infill density	60 %	Line spacing = line width ÷ density. 5–10 % decorative, 15–20 % standard, 30–40 % functional.
Speeds	Infill 50 · contour 40 · travel 150 · retraction 45 mm/s	Contours print at 80 % of the infill speed; slow down for fine detail.
Temperature / flow	Nozzle 210 °C · bed 60 °C · flow 100 % · fan 100 % · retraction 1.5 mm	Set for your material; raise flow only if you see gaps.
Offsets	Contour offset AUTO = nozzle ÷ 2 · contour gap AUTO = line width ÷ 3	Keep AUTO; use manual values only if the real line width differs.
Pellet	Virtual diameter 1.75 mm · screw Ø 30 mm · 14 kg/h · density 1.24 g/cm³	Calibrate the virtual diameter with a weighed test move before a real print.
Scan	Line Scan · start 45° · increment 90° · stripe 15 mm	Stripe Scan for very large parts.

Concrete Slicer

Setting	Default	How to tune
Layer / line / nozzle	10 / 30 / 25 mm	Line width a little above the nozzle diameter; layer height about a third of the line width.
Wall pass	Flow 25,000 · speed 35 · pressure 6	Walls carry the load: moderate speed, steady pressure.
Infill pass	Flow 40,000 · speed 45 · pressure 7	Faster than walls; raise pressure with flow.
Foundation / top	Foundation 30,000 / 25 / 8 · top 20,000 / 30 / 5.5	Foundation slow with high pressure for bonding; top gentle for a clean finish.

Setting	Default	How to tune
Layer wait	5 s	Increase if lower layers sag; reduce if layers do not bond.
Offsets	Wall offset AUTO = nozzle ÷ 2 · infill gap AUTO = 0.75 × line width	Keep AUTO unless the bead width differs.
Strategy	Line Scan · increment 90° · stripe width 800 mm · 5 contours, amplitude 16, frequency 60	Use Contour Parallel for thin walls; Stripe Scan for very long layers.

12 ALL SLICERS Scan strategy

SLM/EBM, DED, FFM and Concrete order and fill every layer the same way; only the stripe gap and the Concrete extras differ. The overview graphic in *Support settings* shows contour order, line scan, stripe scan and layer rotation.

Slicer	Angle (default)	Stripe gap (AUTO)	Strategies
SLM / EBM	Start angle 67°, increment 67°	hatch spacing ÷ 4	LINE_SCAN, STRIPE_SCAN
DED	Start angle 0°, rotation 67°	hatch spacing ÷ 3	LINE_SCAN, STRIPE_SCAN
FFM	Start angle 45°, increment 90°	line width ÷ 3	LINE_SCAN, STRIPE_SCAN
Concrete	Start angle 0°, increment 90°	0.75 × line width	LINE_SCAN, STRIPE_SCAN, CONTOUR_ONLY, CONTOUR_PARALLEL

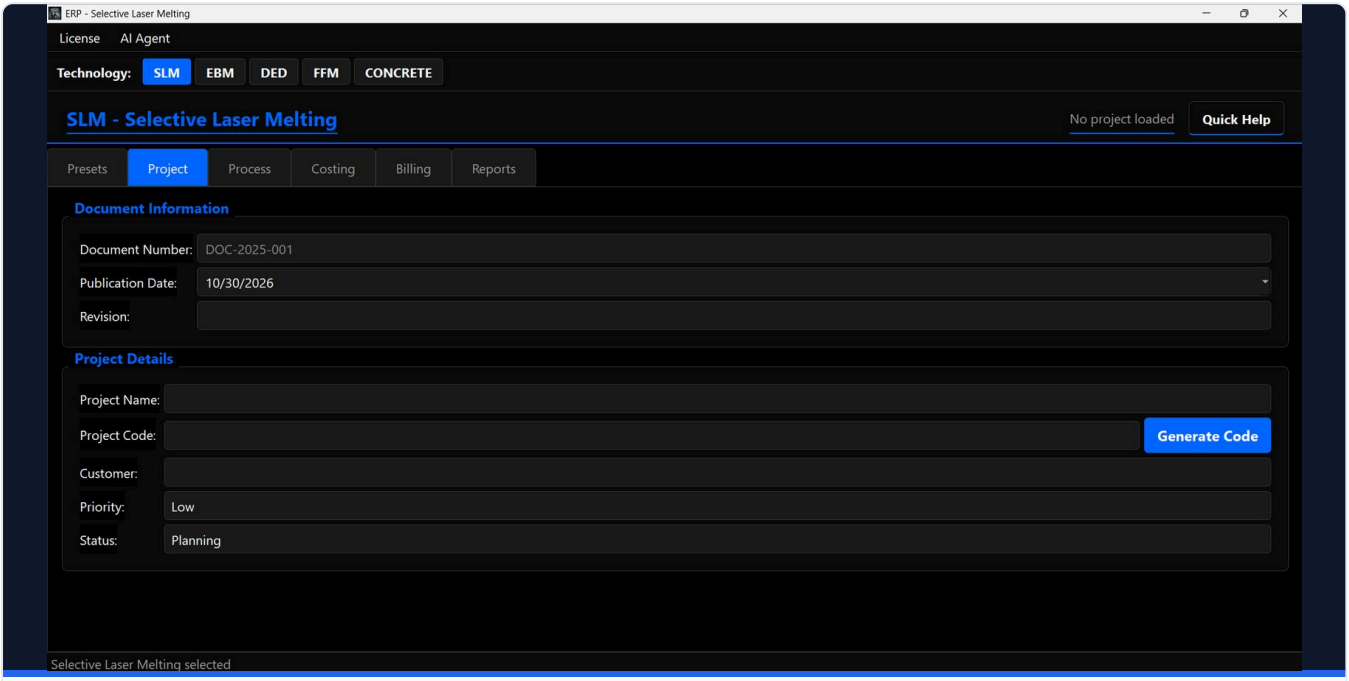
The same in all four slicers

- **Contours first:** outer contours from large to small, then hole contours, then every infill line. Concrete calls the contours "walls".
- **Line Scan:** parallel lines at the layer angle; with **Bidirectional** on (default in all four slicers), every second line is reversed (zig-zag).
- **Stripe Scan:** the layer is cut into bands, each hatched at 45°, with a gap you can set (AUTO = the value in the table). With Shift and Rot at 0 the bands are cut across the long side of the layer.
- **Stripe Shift and Rot:** when either is above 0, the bands lie on a fixed grid anchored at the origin. Shift slides the grid by that many millimetres every layer; Rot turns the grid and the hatch by that many degrees every layer, so band edges do not stack from layer to layer. Both are 0 (off) by default.
- **Layer rotation:** in Line Scan the angle turns by the angle increment every layer.
- CONTOUR_ONLY and CONTOUR_PARALLEL exist in the Concrete Slicer only. Controls that do not apply to the chosen strategy are inactive.

REPORTING

13 ERP — manufacturing and cost report

An ERP-style manufacturing and cost report for every technology. Pick the technology in the bar under the menu bar; each one keeps its own presets.



ERP: technology bar under the menu bar (SLM, EBM, DED, FFM, CONCRETE) and the Project tab.

1. **Select the technology.** SLM, EBM, DED, FFM or CONCRETE; the title and status bar show the choice.
2. **Fill in the project.** Project tab: Document Information (number, publication date, revision) and Project Details (name, code with Generate Code, customer, priority Low / Medium / High / Critical, status Planning / In Progress / Completed).
3. **Enter process data.** Process tab: material, power, speed, hatch spacing, layer thickness and build volume, entered manually for your process.
4. **Calculate cost.** Costing tab: machine cost, lifetime, working days and hours, production time in hours; material cost per kg and amount; gas, electricity, labor; VAT. The total updates automatically and is always shown in "$".
5. **Reuse settings.** Tools › Save Current Settings as Preset stores material, process values and costing inputs; Tools › Manage Presets loads them. Projects and presets are stored in a local database.

Save, Billing and Reports

- **Presets** store the material, five process values and the costing inputs — not project information, billing data or post-processing text.
- **Save / Load Project** stores project, process, costing and post-processing data plus client name, e-mail and phone. Saving requires a project name; Load lists only projects of the current technology.
- **Billing:** From / Bill To, invoice number and dates (due date = +30 days), currency, line items and Add Manufacturing Cost (including VAT); Generate Invoice PDF. The currency only changes the symbol on the PDF — amounts are not converted.
- **Reports:** post-processing text with quick-insert buttons; Export PDF Report needs a project name.

Shortcut	Action
Ctrl + N / Ctrl + O / Ctrl + S	New, load and save project
F1	Quick Help

CHEAT SHEET

14 Quick reference

Mouse and keyboard (Support view)

Input	Action
Left drag (empty space)	Rotate the camera
Left drag (on a part)	Move that part in XY (the Drag axis buttons limit it to X or Y)
Scroll wheel	Zoom
Shift + left drag	Pan
Double click (empty space)	Reset to the default isometric view
Ctrl + left click (Add Mode)	Place a manual support at the green dot
Ctrl + left click (Delete Mode)	Remove the nearest support
Click (screen or list)	Select one part
Ctrl + click	Add / remove parts; for CAD the first clicked part is the base
Shift + click (list)	Select a range of parts
Delete / Backspace (list)	Delete selected part(s) and their supports
Enter (3D Nest X / Y / Z)	Apply and redraw the build-volume box
Enter (Plate X / Y)	Apply the new gray plate size
Ctrl + C	Fit all parts in view (parts are not moved)
Ctrl + Shift + A	Open / close the AI Agent

Situation and solution

Situation	What to do
Very large or high-polygon mesh in STL Repair	Tick Split + Multi-Core Repair + Union; raise Tries or Retry Overlap if a seam will not union; use Retry Union Only to repeat just the union.
Very large part with many supports	Use Split + Auto Support + Union, or increase Min Spacing / choose Dual cylinders.
Need Base Support with a split part	Run the normal Generate, then Union (Base Support is ignored in Split + Union).
Only some overhangs need support	Enable Face Selection and tick the regions in the Overhang Face Selector.

Situation	What to do
No overhangs detected / too many supports	Lower the Overhang Angle (30° or 20°) / widen Min Spacing.
Thin walls and fins	Run Analyze Wall Thickness; keep Vertical Thin Area Supports on.
Hollow or enclosed part	Stop Mode: Lower Face.
Packing several parts	3D Nest before generating supports; Undo 3D Nest to step back.
Edited the part with CAD tools	Generate supports afterwards — CAD operations delete supports.
Contours look off-size (DED / FFM / Concrete)	Keep Contour Offset / Wall Offset on AUTO; set a manual value only if the real bead width differs.
Pellet extrusion amounts wrong	Calibrate the virtual diameter and axis letter on a short test move.
Slow processing	Heavy jobs run in the background; a recent CPU, RAM and GPU give the best results on large models.
Not sure what a control does	Use the Quick Help button in each module.

Tips

- **Order matters:** CAD first, then nest, then supports, then Union. Nesting and CAD delete supports.
- **Keep your work:** use Add Part(s) instead of Load Multiple Files. Only Reset All and Load Multiple Files reset your camera angle.
- **Large meshes:** Simplify (÷2 / ÷4 / ÷8) before generating speeds up detection a lot.
- **Damaged parts:** run CAD › Modify › Repair / Clean before Boolean, Hollow or Offset.
- **Lattice on big parts:** use a larger cell size and apply it to the original part.
- **Weak spots:** run Wall Thickness Analysis with a value that matches your printer's limits.

15 AT A GLANCE Solution summary

The problems ADDITIVEELITE is built to solve.

Problem	ADDITIVEELITE solution
Fragmented software tools	All-in-one: 6 modules on one platform
High license costs	€3K/year (competitors €15K–20K)
Large-part processing failures	Disk-backed, resource-aware processing
No cost reporting	Built-in ERP module
Single-technology lock-in	Metal + polymer + concrete together
Manual, menu-driven operation	**AI agent in every module**

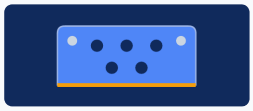
Where it is used — example parts by industry



Aerospace & space — 35%

- Turbine impellers and blades
- Fuel injector nozzles
- Lightweighted mounting brackets

MATERIAL **Ti-6Al-4V, Inconel 718**
PROCESS **SLM, EBM, DED**



Automotive — 25%

- Conformal-cooled mold inserts
- Lightweight engine / suspension brackets
- Prototype and fixture parts

MATERIAL **AlSi10Mg, SS316L**
PROCESS **SLM, FFM**



Medical & dental — 20%

- Acetabular cup (hip implant)
- Dental bridge / crown framework
- Patient-specific surgical guides

MATERIAL **Ti-6Al-4V, CoCrMo**
PROCESS **SLM, EBM**



Energy & defense — 20%

- Heat-exchanger channel structures
- Gas-turbine components
- DED repair of worn parts

MATERIAL **Inconel 718, SS316L**
PROCESS **SLM, DED**

Parts are representative application examples; drawings are illustrative only. Industry shares match the estimates on the market page.

Performance — architectural decisions

Compute / UI separation

Loading, slicing, placement and export run in the background, so the interface keeps responding. The compute engines are independent of the interface.

Multi-core + shared memory

Model data is placed in shared memory once and used by all cores; the number of workers adapts automatically to free CPU and RAM.

Fallback chains

Critical steps such as Union and repair pass through multi-stage chains that try different methods in turn; steps that could hang are protected by timeouts. If resources run low, slicing switches to safe mode.

Disk-backed layers

Layers are written to disk and only what is needed stays in memory; temporary files are cleaned up on cancel or error.

Native (compiled) compute

Heavy geometry work — boolean, ray tracing, polygon clipping and drawing — runs in compiled native libraries; the management layer only orchestrates the workflow.

AI agent

Every module offers natural-language control through an agent; settings change within defined limits and run without asking, and only a full program reset asks first. If the agent is unavailable, the modules keep working.