

From the cutting pattern to the ready-to-run laser job

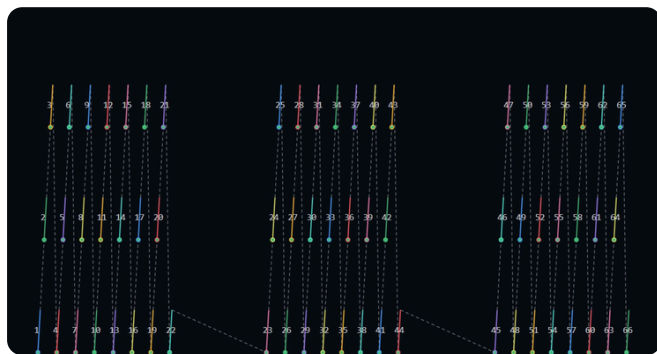
lpi.tool takes a hypotube, stent or catheter pattern from the drawing to a ready-to-run job on your tube-cutting machine: pattern, cut order, execution on the axis controller, and a recording of what the axes really did.

THE PROBLEM

A new pattern usually means manual CAM work and test cuts before the first good part. Cut order and re-gripping are set by hand, the machine's speed limits are found by trial, and whether the axes did what was programmed is checked late, on the part.

WHAT LPI.TOOL DOES

- 1. Generate or import the pattern.** Common hypotube patterns (interrupted spiral, brick, dog-bone) from the pattern generator, or your own DXF, up to 2 m tube length.
- 2. Plan the cut order.** Nearest neighbour for single cuts, or cutting on the fly along the interrupted spiral: the axes keep moving, only the laser switches.
- 3. Execute and record.** The job runs on the axis controller; lpi.tool records position and speed of both axes and replays the run at any speed.
- 4. See the run on the tube.** A 3D replay follows the laser spot; a picture per parameter set shows kerf and heat-affected zone.



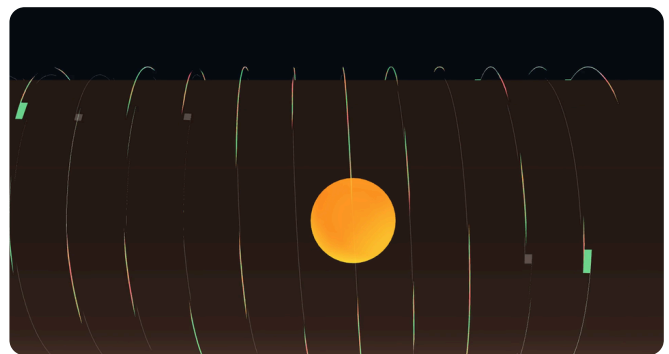
Cut order for a hypotube with 66 contours: cut length and travel length are known before the job runs.

YOUR BENEFIT

- **Faster from pattern to first cut:** the job is generated, not programmed by hand.
- **Higher speed on dense patterns:** with cutting on the fly the axes keep moving while only the laser switches.
- **Deviations seen before the batch:** planned and recorded path side by side.

WHY LPI.TOOL

One tool from pattern to execution, written by an engineer who has built and run these machines. Cut order and cutting on the fly are built in, not a CAM add-on.



3D replay of the run on the tube. The view follows the laser spot.

HOW TO START

Send your own pattern as DXF. LPI runs it through lpi.tool on the ACS simulator or as a dry test on your machine. You see the cut order and the recorded motion before you buy a licence.

Function	What it delivers	Status
DXF import and cut order	Typical use case, dense cutting patterns: your DXF up to 2 m tube length; cut order nearest neighbour, left-to-right or manual	Available
Pattern tool for LCHT	Laser-cut hypotubes (interrupted spiral, catheters): pattern tool with DXF export (laserintelligence.ch/hypotube) and import in lpi.tool as the special case COTF, cutting on the fly along the interrupted spiral with adjustable corner tolerance	Available
Execution	Coordinated motion of linear and rotary axis; recording of position and speed; Stop switches the laser off before the axes halt	Available
Axis profiles	Named sets of speed, acceleration and jerk per axis; tangential values on the tube surface; stored with every run	Available
Playback	Preview of the planned job and replay of the recorded run, 0.1x to 100x	Available
Kerf and HAZ	Picture of kerf and heat-affected zone per parameter set	Available, qualitative
Planned vs. recorded	Path and speed of the axes side by side	Available

Component	Supported
Axis controller	ACS SPiiPlus · Aerotech A3200 · Aerotech Automation1
Axis layout	On-centre and off-centre arrangements
Laser source	Light Conversion Carbide (connection, interlock, emulator for simulation without laser); other sources via digital output
Export	ACSPL+ program (ACS, point-to-point jobs), AeroBasic program (Aerotech); G-code editor
Computer	Windows 10/11, .NET

VALIDATION

- Ongoing testing of hardware and software features.

KERF AND HEAT-AFFECTED ZONE

For every parameter set lpi.tool shows a qualitative picture of kerf and heat-affected zone: whether the cut goes through and where the heat-affected zone grows. Parameter sets can be compared before the first cut.

AVAILABILITY

Ready for installation on your machine. Talk to us about your machine configuration, application and materials.

Demo videos: laserintelligence.ch/demos

More features, more applications and more materials to come.