



Laser Cutting Nesting API

Cutting irregular parts on a laser is a true-shape nesting problem — a part is a polygon, not a rectangle, and parts interlock into each other's concave pockets. The CutOptim Engine API solves it over HTTP at `POST /v1/optimize/nest`: your CAD/CAM, ERP or quoting software sends the part outlines and the sheets as JSON and gets back the nested layout, every placement and the sheet count.

6 vs 9

SHEETS VS BOUNDING BOX (272-PART JOB)

Nest

POST /v1/OPTIMIZE/NEST

REST

JSON · OPENAPI 3.1

Live

TRUE-SHAPE ENGINE (JAGUA-RS)

Live today. True-shape nesting runs in production — a geometric collision engine, a different class from the rectangular guillotine packer.

Why laser shops need true-shape nesting

A rectangular packer counts each part's bounding box as solid, so the notch-air inside an L-bracket or a triangular gusset is thrown away. True-shape nesting interlocks the real outlines and reclaims it.

The honest, cross-comparable metric is **sheet count on the same parts**: on a representative 272-part job the nest used **6 sheets where the same parts by bounding box need 9**. A density percentage is not comparable — a bounding box counts notch-air as solid, so it reads higher for a worse result.

What you send, what comes back

Send each part as a polygon outline (with optional interior holes) and a quantity, plus the stock sheets. Rotation can be continuous or a discrete list; `minSeparation` sets the clearance for the beam width.

The response gives every placement as a rigid transform — a rotation, then an x/y translation — plus the sheet count, the density and any unplaced parts. Ask for `include: ["svg", "dxf"]` and the layout comes back as a file inline.

POST /v1/optimize/nest

```
{
  "parts": [
    { "name": "bracket",
      "polygon": [[0,0],[300,0],[300,100],
                  [100,100],[100,300],[0,300]],
      "qty": 12,
      "allowedRotations": "continuous" },
    { "name": "gusset",
      "polygon": [[0,0],[280,0],[140,240]],
      "qty": 8 }
  ],
  "stock": [{ "w": 3000, "h": 1500, "qty": 20 }],
  "options": { "minSeparation": 0.3 }
}
```

200 OK

```
{
  "engine": "lbf",
  "deterministic": true,
  "metrics": {
    "sheetCount": 3,
    "placed": 20, "total": 20
  },
  "sheets": [ /* placements + density */ ]
}
```

Free: `POST /v1/validate/nest` checks a job with no key and no quota. Per-sheet exclusion zones (a defect, a clamp) let the engine nest around a no-go region.

Why build on this engine

Deterministic — reproducible for quotes and audits. A pinned seed makes the same request return the same nest: no randomness in the layout. Cache it, diff it in tests, reproduce a quote months later.

TRUE-SHAPE

Arbitrary polygons with holes, interlocked into each other's pockets — not bounding boxes.

EXCLUSION ZONES

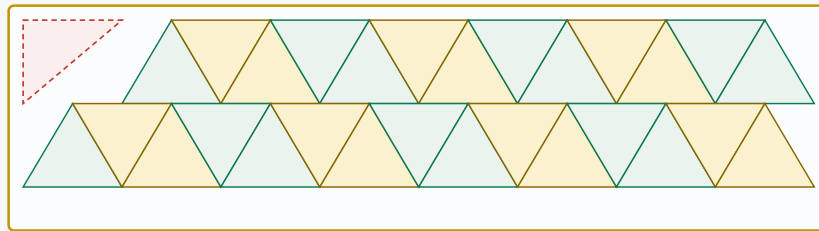
Nest around a defect, a clamp footprint or a pre-printed area — a capability the rectangular API cannot express.

DETERMINISTIC

A pinned seed reproduces the nest exactly, for quotes, audits and repeat orders.

What the nest looks like

TRUE-SHAPE NEST



△ Part · polygon

▽ Part · polygon

▤ Exclusion zone

6 sheets

vs 9 by bounding box

One nested sheet, schematic. Irregular parts interlock into each other's pockets; the dashed corner is an exclusion zone the engine nests around. The honest metric is sheet count — 6 vs 9 by bounding box on a representative 272-part job — not a density percentage.

Integrate in three steps

- 1 **Validate for free** — `POST /v1/validate/nest` confirms your payload with no key and no quota.
- 2 **Get a sandbox key** in the dashboard and start the 14-day trial.
- 3 **Call optimize** and read the plan straight into your ERP, quote or machine file.

Pricing

€49 /month

- **10,000 requests / month** — hard cap, no overage, no surprise bill.
- **14-day trial** · billed in EUR.
- Higher volume or separate staging keys? Tell us your numbers.

See the nest on your parts

Send us a sample of your part outlines and we'll return the nest the API produces on your own data. Or start the 14-day trial and call it today.

support@cutoptim.com · cutoptim.com/engine/laser-cutting



SCAN TO OPEN

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