CutOptim

ENGINE API · NESTING · LIVE TODAY

Sheet Metal Nesting API

Nesting irregular sheet-metal parts onto plate is a true-shape problem, and the CutOptim Engine API solves it over HTTP at POST /v1/optimize/nest. Your ERP, MES or quoting software sends the part outlines and the plate sizes as JSON and gets back the nested layout, every placement and the plate count — for laser, plasma or waterjet.

6 vs 9	Nest	Zones	Live
PLATES VS BOUNDING BOX (272-PART JOB)	POST /V1/OPTIMIZE/NEST	NEST AROUND PLATE DEFECTS	TRUE-SHAPE ENGINE (JAGUA-RS)

Live today. The same true-shape engine over HTTP, so an ERP or MES can nest and quote a plate job without a browser.

Why sheet-metal fabricators need it

Plate is expensive, and irregular parts waste it: a rectangular packer treats each part's bounding box as solid, so the air inside a gusset or an L-bracket is thrown away. True-shape nesting interlocks the real outlines and reclaims it.

The honest, cross-comparable metric is **plate count on the same parts**: on a representative 272-part job the nest used **6 plates where the same parts by bounding box need 9**. A density percentage is not comparable — a bounding box counts notch-air as solid.

What you send, what comes back

Send each part as a polygon (with optional holes) and a quantity, plus the plate sizes. Tag parts and plates with a `material` and the job is partitioned so a part nests only on plate of its own material.

Every placement comes back as a rigid transform (rotation, then x/y), with the plate count and density. Any `meta` object — your part number, order line — returns verbatim on every placed copy, so the nest reconciles with your ERP.

POST /v1/optimize/nest

```
{
  "parts": [
    { "name": "gusset",
      "polygon": [[0,0],[400,0],[0,400]], "qty": 16 },
    { "name": "bracket",
      "polygon": [[0,0],[350,0],[350,120],
        [120,120],[120,350],[0,350]], "qty": 10 }
  ],
  "stock": [{ "w": 3000, "h": 1500, "qty": 12,
    "exclusions": [{ "polygon":
      [[0,0],[250,0],[0,250]], "quality": 0 }] }],
  "options": { "minSeparation": 2 }
}
```

200 OK

```
{
  "engine": "lbf",
  "deterministic": true,
  "metrics": {
    "sheetCount": 4,
    "placed": 26, "total": 26
  },
  "sheets": [ /* placements + density */ ]
}
```

Free: `POST /v1/validate/nest` checks a job with no key and no quota. A quality-0 exclusion zone is a hard no-go region for every part.

Why build on this engine

Deterministic — reproducible for quotes and audits. A pinned seed makes the same request return the same nest, so a plate quote is reproducible for an audit or a repeat order and can be diffed in tests.

TRUE-SHAPE

Arbitrary polygons with holes, interlocked — brackets, gussets, flanges, gaskets, not bounding boxes.

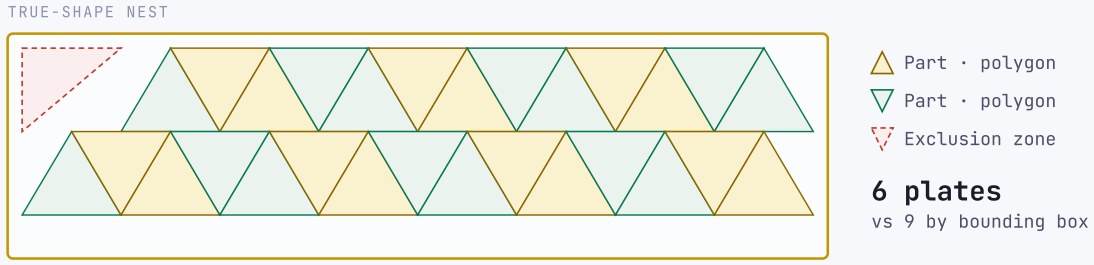
EXCLUSION ZONES

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

META + MATERIAL

Part numbers echo back verbatim; a material tag partitions the job onto matching plate.

What the nest looks like



One nested plate, schematic. Gussets and brackets interlock into each other's pockets; the dashed corner is an exclusion zone (a defect or a clamp) the engine nests around. The honest metric is plate 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 plate sizes. Or start the 14-day trial and call it today.

support@cutoptim.com · cutoptim.com/engine/sheet-metal-nesting

SCAN TO OPEN
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