

Rebar Cutting & Bending Optimization API

A REST API that takes a **bar bending schedule (BBS)** + **your available stock** and returns an **optimized cutting plan, bending schedule and offcut inventory** — deterministic, machine-readable, ready to embed in your ERP, estimating or detailing software.

1,259

PUBLIC BENCHMARK
JOBS

1-3%

WASTE, OPTIMIZED

REST

JSON · OPENAPI 3.1

1D · 2D

PROVEN ENGINE, NEW
DOMAIN

This is a request for feedback, not a sales pitch. We are validating this API with a handful of design partners before we build the rebar layer. We would value 20 minutes of your perspective — and in return we will show you the working optimization engine live.

The problem

Rebar fabricators cut thousands of bars a day from 12 m stock. The cutting plan is made by hand, in Excel, or inside closed desktop suites. Every rebar ERP and detailing tool needs waste optimization — but today there is **no rebar-aware developer API** for it: generic cutting APIs know nothing about shape codes, bending deductions or machine formats, and rebar suites keep their optimizers locked inside desktop products. Published case studies report 0.9–1.5% waste on optimized plans; one fabricator trial halved its scrap.



What the API does

Input: bar list (mark, Ø, grade, BS 8666:2020 shape code — other national systems pluggable — dimensions, qty) + stock (standard lengths, reusable offcuts) + options.

Output: cutting patterns per Ø/grade (which stock bar → which cuts), waste %, produced offcuts, and a bending schedule with cut lengths and weights.

POST /v1/rebar/optimize

```
// request
{
  "units": "mm",
  "stock": {
    "standardLengths": [12000, 6000],
    "offcuts": [{ "diameter": 16, "length": 3400,
"qty": 12 }]}
},
  "options": { "cutAllowance": 5,
"minReusableOffcut": 1000 },
  "bars": [
    { "mark": "B01", "diameter": 16, "grade": "B500B",
"shapeCode": "11", "dimensions":
{"A": 2000, "B": 350, "qty": 140 },
    { "mark": "B02", "diameter": 16, "grade": "B500B",
"shapeCode": "00", "length": 4750, "qty": 60 }
  ]
}
```

200 OK

```
// response
{
  "engineVersion": "rebar-1.0.0+e7c2",
  "summary": {
    "stockBarsUsed": 49, "wastePct": 1.7,
    "totalWeightKg": 958.3, "offcutsProduced": 6
  },
  "cutPlans": [{ "diameter": 16, "stockLength": 12000,
"patterns": [
    { "count": 21, "cuts":
["B01", "B01", "B01"], "wasteMm": 465,
    { "count": 14, "cuts":
["B02", "B02", "B01"], "wasteMm": 158
  ] }],
  "bendingSchedule": [
    { "mark": "B01", "cutLength": 2302, "qty": 140 },
    { "mark": "B02", "cutLength": 4750, "qty": 60 }
  ],
  "offcuts": [{ "length": 1420, "qty": 4 }]}
}
```

Cut lengths are computed from shape code + dimensions with standard bending deductions (e.g. shape 11: $A + B - 0.5r - d$), or you can supply your own cut lengths and use pure cutting optimization.

Why us

This is not a from-scratch project — it is us taking a **proven engine into a new domain**. The API runs on the **CutOptim** engine, already sold as a developer product — the **CutOptim Engine API** (REST + JSON, OpenAPI 3.1, with **1,259 public benchmark jobs**). We have spent years making 1D and 2D cutting optimization fast, correct and integrable; the rebar API extends that same expertise to reinforcement steel, adding the shape-code, bend-deduction and offcut-inventory layer on top of an engine that already works.

Results are **deterministic and version-pinned**: same input + same `engineVersion` = same output, which makes every optimization auditable and reproducible in quotes and production orders — the same guarantee CutOptim customers already rely on.

Not in v1 — tell us if you need it

- BVBS (`.abs` , BF2D/BF3D) export for bending machines; Unitechnik/PXML for precast
- IFC / Tekla BBS import
- Coil/spiral processing, multi-strand shear-line constraints
- PDF bending-schedule documents

Roadmap options we will build **with** a customer, not on speculation.

Pricing direction

DEVELOPER	self-serve, usage-based (per optimization), free sandbox key
BUSINESS	annual contract, volume tiers, SLA + support
OEM	license, optional self-hosted engine

Not set yet — pricing is part of what we're validating. Tell us what a fair model looks like for you.

What we are asking — 5 questions, 20 minutes

1. Where does the cutting plan come from today in your product or your customers' workflow?
2. What input format would you feed us — your own BBS data model, Tekla/CAD export, BVBS, Excel?
3. What output do you need beyond JSON — PDF schedule, BVBS machine files, labels?
4. Would "X% less steel waste" be a selling point for **your** product?
5. What would make this a no-brainer to integrate — and what would kill it?

Let's talk. Reply to this email or book 20 minutes and we'll show the working 1D engine live. · support@cutoptim.com · cutoptim.com · cutoptim.com/engine