

— COST COMPARISON

# HVOF VS HVAF: A THREE-YEAR COST COMPARISON

What an ID-Nova MK7 or Mini-Nova cell costs to own and run against a competitive HVAF alternative — rebuilt at 2026 powder prices, with the deposition-efficiency assumption stated and tested.

THE SHORT VERSION

# One cell, three years, one testable assumption

- 01 On the modelled cell, the Spraywerx solution runs 34% lower monthly operating cost and 33% lower three-year total cost of ownership — \$552,538 cumulative, \$484,392 on an NPV basis at 7%.
- 02 The advantage is mostly powder, and powder got more expensive: at 2026 prices the three-year saving is roughly double what the same model produced at 2024–25 prices.
- 03 It rests on one testable assumption — deposition efficiency of 70% (Spraywerx measured, data on request) against 45% (published HVOF norm floor) for the alternative. Section 5 tests what happens if that gap is smaller.
- 04 Even in the worst case we modelled — a 55%/60% efficiency gap and 2024 powder prices — the Spraywerx cell is still \$120,603 cheaper over three years.

|                                                                             |                                                                          |                                                                       |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <div>34%</div> <div>lower monthly operating cost on the modelled cell</div> | <div>\$552,538</div> <div>cumulative three-year saving (33% lower)</div> | <div>\$484,392</div> <div>NPV saving at 7% over the same period</div> |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------|

WHERE THE DIFFERENCE COMES FROM

Powder is 83% of the modelled monthly operating cost on the HVOF side and 81% on ours. So the comparison is really an argument about deposition efficiency — how much of the powder you buy ends up on the part.

# What is being compared

A single coating cell running 100 parts per month in WC-CoCr, costed over three years. The reference part deposits 0.655 kg of coating — equivalent to a 50 mm bore roughly 1 m long at 300 µm, or any part of similar coated volume.

The Spraywerx side is one ID-Nova MK7 or Mini-Nova torch with its system controller. The comparison side is a competitive HVOF system of equivalent capability. We do not name it: the point is the process economics, not a competitor teardown, and the figures are only as good as the assumptions in Section 5 — which is why they are all on the page.

## THE ASSUMPTION THAT DRIVES EVERYTHING

### Every figure in this document traces to these five inputs

| ASSUMPTION                             | VALUE USED                                           | BASIS                                                                                                                                           |
|----------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Spraywerx deposition efficiency        | 70%                                                  | Spraywerx measured on the axial-injection ID-Nova platform under documented conditions, data on request                                         |
| HVOF alternative deposition efficiency | 45%                                                  | Floor of the published HVOF/HVOF norm range (45–55%). Deliberately the least favourable end for the alternative — Section 5 tests the other end |
| Powder price                           | \$250/kg                                             | Illustrative Western WC-CoCr at 2026 prices, pending dated quotes. The 2025 model used ~\$100/kg                                                |
| Electricity, Spraywerx cell            | Modelled at parity with the alternative (\$1,940/mo) | Deliberately conservative. The 2025 model showed \$0, which is not credible; the true figure is lower than parity                               |
| Discount rate                          | 7%                                                   | First year discounted at t=1. Same convention as the 2025 model, stated so it can be re-run                                                     |

SECTION 02

Hardware — one-time

| ITEM              | HVOF ALTERNATIVE                               | SPRAYWERX |
|-------------------|------------------------------------------------|-----------|
| Torch             | \$11,000                                       | \$12,500  |
| System controller | \$75,000 – \$94,000 depending on configuration | —         |
| Total hardware    | \$105,000                                      | \$87,500  |

Spraywerx hardware is \$17,500 lower here, but hardware is not where this is decided — it is 6% of the HVOF three-year cost and 8% of ours.

SECTION 03

Monthly operating cost

| LINE          | HVOF ALTERNATIVE | SPRAYWERX | WHY THEY DIFFER                                                                             |
|---------------|------------------|-----------|---------------------------------------------------------------------------------------------|
| Powder        | \$36,372         | \$23,382  | Same coating mass deposited; 45% vs 70% efficiency means 145.5 kg purchased against 93.5 kg |
| Gas & fuel    | \$1,316          | \$887     | Process gas consumption per hour of spray time                                              |
| Electricity   | \$1,940          | \$1,940   | Modelled at parity — conservative (see Section 1)                                           |
| Spares        | \$1,347          | \$866     | Consumable hardware life                                                                    |
| Labour        | \$2,694          | \$1,732   | Spray hours per part at equivalent output                                                   |
| Monthly total | \$43,670         | \$28,807  | \$14,862/month lower — 34%                                                                  |

# Three-year total cost of ownership

|                         | YEAR 1           | YEAR 2           | YEAR 3           | TOTAL              |
|-------------------------|------------------|------------------|------------------|--------------------|
| Spraywerx — hardware    | \$87,500         | —                | —                | \$87,500           |
| Spraywerx — consumables | \$345,688        | \$345,688        | \$345,688        | \$1,037,064        |
| <b>Spraywerx total</b>  | <b>\$433,188</b> | <b>\$345,688</b> | <b>\$345,688</b> | <b>\$1,124,564</b> |
| HVAF — hardware         | \$105,000        | —                | —                | \$105,000          |
| HVAF — consumables      | \$524,034        | \$524,034        | \$524,034        | \$1,572,102        |
| <b>HVAF total</b>       | <b>\$629,034</b> | <b>\$524,034</b> | <b>\$524,034</b> | <b>\$1,677,102</b> |

|                                                                               |                                                                              |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <div>CUMULATIVE THREE-YEAR SAVING</div> <div><b>\$552,538</b> 33% lower</div> | <div>NPV SAVING AT 7%</div> <div><b>\$484,392</b></div>                      |
| <div>NET PRESENT VALUE, SPRAYWERX</div> <div><b>\$988,970</b></div>           | <div>NET PRESENT VALUE, HVAF ALTERNATIVE</div> <div><b>\$1,473,362</b></div> |

# Does the conclusion survive different assumptions?

This is the section the 2025 version was missing. If you distrust the efficiency gap or the powder price — and you should test both — here is the same model across a range of each. Every cell is the cumulative three-year saving for the Spraywerx cell.

| POWDER PRICE                   | 45% VS 70% DE (BASE) | 50% VS 65% DE (CONSERVATIVE) | 55% VS 60% DE (WORST CASE) |
|--------------------------------|----------------------|------------------------------|----------------------------|
| \$100/kg (2024 era)            | \$271,951            | \$193,674                    | \$120,603                  |
| \$150/kg                       | \$365,480            | \$248,065                    | \$138,459                  |
| \$250/kg (2026 illustrative)   | \$552,538            | \$356,846                    | \$174,170                  |
| \$300/kg (Mar 2026 peak print) | \$646,068            | \$411,237                    | \$192,026                  |

THE CONCLUSION DOES NOT FLIP ANYWHERE IN THAT GRID

Squeeze the efficiency gap from 25 points down to 5, roll powder back to pre-squeeze prices, and hold our electricity at parity with the alternative, and the Spraywerx cell is still \$120,603 cheaper across three years. What changes is the size of the win — and rising powder prices make it larger, because the whole advantage is denominated in powder you do not have to buy.

Sensitivity holds hardware, gas, spares and labour constant and varies only powder price and the deposition-efficiency pair. Powder is the dominant line, so this is the sensitivity that matters; a full parameter sweep is available on request.

# What this model does not include

|                                        |                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| FACILITY, INSTALLATION AND TRAINING    | One-time and site-specific — ask us and we will scope them for your building rather than model an average.                                       |
| MASKING, MACHINING, GRIT AND FINISHING | Real costs, broadly similar between the two processes, and they do not change the powder arithmetic.                                             |
| DOWNTIME AND SCRAP                     | Both would need field data from your operation to model honestly.                                                                                |
| COATING PERFORMANCE                    | This document compares cost to produce a coating, not the coating. Chemistry and wear-mode selection are covered in the Powder Selection Matrix. |

## RUN IT ON YOUR OWN NUMBERS

The cost-per-part calculator takes your geometry, your thickness, your powder quote and your coater's measured deposition efficiency and rebuilds this arithmetic on your parts: [spraywerx.com](https://www.spraywerx.com). If you would rather have it measured than modelled, a free 15-minute scoping call scopes a prototype day on your actual component.

## SOURCES

1.

Fastmarkets tungsten benchmarks (Jun–Jul 2026)
2.

CTIA European APT quotes (Jul 2026)
3.

Trade-press WC powder prints (Mar 2026)
4.

Deposition-efficiency norm range 45–55% per published thermal spray literature
5.

Spraywerx 70% measured under documented conditions

**Conventions:** NPV at 7% with the first year discounted at t=1. Model rebuilt August 2026 from the February 2025 comparison; hardware, gas, spares and labour lines carried forward unchanged. Full numbered citation register maintained by Spraywerx; available on request.



Patent-pending ID-HVOF technology for internal diameters down to 2.5" (63.5 mm). Thermal spray and laser cladding systems, powders, and coating development.

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