

What manual hardfacing costs you

One measured trial: 32-inch triple-eccentric butterfly valve, 5 mm coating

The same part, welded two ways

	Manual hardfacing, 2 welders	Automated PTA cell
Welding time per part	16 man-hours	80 minutes
Consumable used	23 kg welding wire	4.5 kg alloy powder
Machining allowance left	3 – 4 mm	0.5 – 1 mm

Welding time is arc time only on both sides — neither figure includes loading, unloading or fixturing. Allowance is per side.

Why the allowance line is the one that matters

Every millimetre of allowance is alloy you paid for, deposited, and then machined off again. It costs you three times: in powder or wire, in machine hours removing it, and in the risk that an out-of-round seat gets machined into the dilution zone.

It is a quality number disguised as a cost number.

And why the process, not the operator, decides it

Deposition process	Typical dilution ratio
Submerged arc welding (SAW)	30 – 60 %
Manual arc welding	15 – 30 %
Strip submerged arc welding	10 – 20 %
PTA plasma cladding	approx. 5 %
Laser cladding	below 5 %

Dilution ratio is the share of the finished deposit that came from melted base metal rather than from the alloy you specified. Ranges for the first three processes reflect general industry experience; the PTA and laser figures are Duomu measured values.

Run it on your own numbers. The companion spreadsheet takes your labour rate, consumable prices and machining cost and works out the annual difference for your production volume, plus a simple payback period. Nothing to sign up for.

Or send us a part. If something is wearing out faster than it should, send a photo of the worn surface and, if you have one, a cross-section. We will tell you what we see in it. No charge and no obligation.

Basis: figures are from one documented Duomu comparative trial and describe that trial. They are not a guaranteed performance specification, and results on your parts will differ. Full assumptions are set out on the Basis sheet of the companion workbook.