

Laser vs High-Frequency Welded Tube Mill

The laser line we build, and how to choose between laser and HF welding.

The laser line we build

Item	Specification
Mill type	60
Round pipe	32 – 96 mm
Square pipe	25×25 mm to 75×75 mm
Rectangular tube	100×50 mm
Wall thickness	0.8 – 2.5 mm
Laser welder	6000 W, welds up to 2.5 mm, 2 vertical rolls, 40 mm shafts
Forming section	8 horizontal + 8 vertical stands
Sizing section	4 horizontal + 4 vertical stands
Shaft diameter	horizontal 60 mm, vertical 40 mm
Main drive	2 × 18.5 kW
Cutter	Automatic circular saw, model 400
Decoiler	Single-head 5 t manual
Supply	415 V, 50 Hz, 3-phase

Sample sections the line is set up for

Round 38 mm and 75 mm; square 25×25, 50×50 and 75×75 mm; rectangular 100×50 mm.

Choosing between laser and high-frequency

- **Laser wins** where the seam is visible or the material is difficult: narrower weld seam, lower heat input, less distortion, and it welds coated and stainless strip with less damage to the coating.
- **High frequency wins** on throughput and cost per metre, and on heavier wall. The HF lines on this site run to 165 mm OD and 5.0 mm wall; the laser line is specified to 2.5 mm.
- **The tell is the wall thickness and the surface.** Thin wall plus a visible seam points at laser; heavier wall plus volume points at HF.
- **Speed is not the whole comparison.** A stainless or coated line runs slower than a carbon-steel line either way — what changes is how much of the coating survives the weld and how much dressing the seam needs.

Machine pages and further reading

- Laser welding vs high-frequency welding in a steel tube mill — steelpipemachines.com/posts/laser-vs-high-frequency-welding-in-a-steel-tube-mill
- Laser pipe mill — steelpipemachines.com/category/laser-pipe-mill