SANAATCHI
INDUSTRIAL VISION GROUP

Steel Fabrication Production Line

Complete Turnkey Business Proposal

Automatic H-beam cutting, assembly and welding line

6-15 m	0.8-1.5	4-8
beam length	**m/min welding**	**line operators**

Prepared for investment planning in Afghanistan and regional export markets. Final specifications, pricing, civil works, and utility loads require supplier quotation and site survey.

Executive Summary

This proposal covers a CNC structural-steel fabrication line focused on welded H-beams for industrial halls, warehouses, bridges and commercial structures. The integrated line combines plate handling, CNC cutting, web and flange assembly, submerged-arc welding, hydraulic straightening, drilling, shot blasting, coating preparation and dimensional inspection.

Why this project fits Afghanistan

- Industrial buildings and logistics warehouses require standardized structural members.
- Local fabrication reduces delivery time and allows project-specific beam lengths and connections.
- CNC processing improves hole accuracy, weld consistency and traceability.
- The same workshop can support columns, rafters, crane beams and custom steel assemblies.

Sanaatchi delivery scope

- Factory setup planning, supplier pre-qualification, and technical comparison
- Complete production-line and individual equipment supply
- Factory layout, utilities, civil-work coordination, installation, and commissioning
- Raw-material sourcing, trial-batch qualification, and repeat supply planning
- International logistics, customs documentation, operator training, spare parts, and after-sales support

Automatic H-beam line for 200-1,500 mm web height, 200-800 mm flange width, 6-30 mm web thickness and 6-15 m workpiece length, supported by CNC drilling and shot blasting.

Manufacturing Process & Product Portfolio

Integrated process flow

Target products

Product	Typical specification	Primary market
Welded H-beam	Custom web and flange sizes	Factories and warehouses
Structural columns	Base plates and connection holes	Commercial construction
Crane beam	Heavy-duty welded section	Industrial plants
Bridge beam components	Project-specific inspection plan	Infrastructure contractors

Final equipment selection follows the maximum plate thickness, beam envelope, welding procedure, steel grade and applicable structural code. A certified welding-quality system, consumable control, non-destructive testing plan and calibration program are essential parts of the factory setup.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Plate handling system	Load and position web and flange plates	Magnetic or vacuum lifting
2	CNC flame/plasma cutter	Cut plates and profiles	Nesting software
3	H-beam assembly machine	Center and tack web to flanges	Hydraulic alignment
4	SAW welding gantry	Deposit main longitudinal welds	0.8-1.5 m/min
5	Flux recovery	Collect and recycle submerged-arc flux	Integrated
6	Flange straightener	Correct welding deformation	Hydraulic or roller
7	CNC beam drill	Drill connection holes	Up to 40-50 mm diameter
8	Band saw	Cut finished beams to length	Automatic feed
9	Shot-blasting machine	Prepare steel surface	Roller conveyor
10	Paint booth	Apply primer or coating	Filtered extraction
11	Metrology and NDT	Verify dimensions and weld integrity	UT, MT and calibrated gauges

Equipment models are indicative and will be matched to the selected capacity, local raw-material tests, available utilities, and preferred automation level.

Reference Equipment Gallery

Automatic H-beam cutting, assembly and welding line

Heavy-duty H-beam production equipment

Horizontal automated beam fabrication line

Images are supplier references for configuration discussion; final equipment appearance and model may differ.

Plant, Raw Materials & Utility Requirements

Raw materials

- Certified structural steel plate
- Submerged-arc welding wire and flux
- Shielding gases and electrodes for secondary welds
- Primer and coating materials
- Bolts, plates and connection components
- Abrasive media for shot blasting

Utilities & infrastructure

- High-capacity three-phase electrical service
- Overhead cranes and long material bays
- Welding fume and paint extraction
- Compressed air and gas storage
- Fire-rated coating area and chemical storage
- Heavy truck access and finished-beam yard

Quality, safety and environmental controls

- Mill certificate and material traceability
- Approved welding procedures and qualified welders
- Fit-up, weld-size and distortion checks
- Ultrasonic or magnetic-particle inspection as specified
- CNC hole-location and dimensional inspection
- Surface-preparation and dry-film-thickness verification

A final factory layout must reserve safe forklift routes, maintenance clearances, raw-material segregation, finished-goods storage, fire protection, ventilation, and future expansion space.

Indicative Investment & Implementation Plan

LOW-ENTRY CONFIGURATION

Afghanistan entry case: economical Chinese equipment, locally fabricated noncritical items, local civil works and labor, phased automation, and land excluded. Optional automation can be added after sales are established.

Component	Indicative range	Notes
Entry H-beam machinery	US$0.25m-0.7m	Basic Chinese cutting, assembly, welding and straightening
Drilling, blasting and coating	US$0.15m-0.5m	Start semi-automatic and upgrade later
Local building, cranes and utilities	US$0.15m-0.45m	Economical local steel building; land excluded
Freight, installation and training	US$0.08m-0.25m	Local erection team with supplier supervision
Working capital	US$0.15m-0.45m	Steel plate, consumables and initial projects
Low-entry project total	US$0.78m-2.35m	Manual handling and outsourced coating can reduce entry cost

Implementation sequence

Phase 1	1-2 months	Product envelope, structural codes and capacity planning
Phase 2	2-3 months	Supplier selection, workflow and building design
Phase 3	4-8 months	Equipment manufacture and workshop construction
Phase 4	2-3 months	Shipping, installation and utility connection
Phase 5	1-2 months	Welding qualification, trials, NDT setup and operator training

Ranges are planning targets for a low-cost entry configuration, exclude land, and remain subject to confirmed capacity, supplier quotation, freight, duties, exchange rates and site conditions.

Next Steps & Contact Information

Recommended next steps

- Confirm target products, hourly output, and packaging formats
- Test representative raw materials and document quality requirements
- Complete site survey covering electricity, water, fuel, drainage, roads, and warehouse space
- Request comparable technical and commercial quotations from shortlisted suppliers
- Finalize financing, logistics, installation, training, and spare-parts plan

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Research and image references

- Made-in-China - Wuxi Zhouxiang H-beam line: https://zhouxiangweld.en.made-in-china.com/product/jQRpSUyxCdVc/
- Made-in-China - ZMDE automatic H-beam line specifications: https://zmdetech.en.made-in-china.com/product/sGIprEQPTghL/
- Made-in-China - Nanjing Qizhi integrated H-beam line: https://qizhi2023.en.made-in-china.com/product/DEqUieocCMRS/