



Small Hydropower Turbine Assembly Plant

Complete Turnkey Business Proposal



Made-in-China supplier reference: real small hydropower turbine assembly plant equipment.

bankable study investment gate	confirmed feedstock supply gate	EPC scope delivery gate	quality laboratory release gate
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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

Strategic small-hydropower turbine assembly that matches a proven turbine/generator package to confirmed head and flow, machines/assembles selected components, builds controls, performs run tests and supports commissioning.

Why this project fits Afghanistan

- This is a strategic plant, not a low-entry equipment package.
- Bankable feedstock, utility, permit, market, EPC and financing evidence is required before selection.
- Operate only with an independent laboratory, defined quality release and preventive-maintenance program.

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

Recommended configuration

Proceed only after hydrology, civil intake/penstock design, head/flow confirmation, turbine selection, grid protection, water permits, site access and experienced hydro engineering support are proven.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Small hydro turbine-generator packages	Head, flow, kW output, turbine type, generator, governor, controls, grid protection, materials and test standard	Remote communities, agro-processing sites, mini-grids, irrigation schemes, utilities and hydro EPC projects

Final capacity, process, resource quality, utilities, permit conditions, emissions, acceptance test and commercial terms require independent engineering review before any order.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Hydrology/design confirmation	Selects turbine type	Head, flow and duty
2	Runner/turbine component machining	Prepares wetted components	Material and geometry
3	Generator/governor assembly	Builds generating set	Speed and control
4	Panel/protection integration	Connects safe output	Voltage and grid protection
5	Shop run test/commissioning kit	Verifies package	Performance and acceptance

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



Made-in-China supplier reference: real small hydropower turbine assembly plant equipment.



Made-in-China supplier reference: second real machine configuration for small hydropower turbine assembly plant.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Qualified steel/stainless/cast components, generators, bearings, seals, governors, control panels, cables, paint, test equipment and spare parts

Utilities & infrastructure

- Bankable electricity/fuel/water plans, process cooling and treatment, plant fire safety, laboratory, covered stores and qualified operation team
- Environmental permits, emissions control, waste route, maintenance workshop, critical spares and site-specific safety systems

Quality, safety and environmental controls

- Confirm year-round head/flow, civil and penstock route, turbine design, grid/island mode, transport, permits and named EPC engineer
- Control turbine geometry, clearances, balancing, generator alignment, governor/control settings, protection and corrosion coating
- Test no-load/load performance, vibration, temperature, voltage/frequency, protection, leakage and supplied documentation

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

Small hydro equipment must be selected from proven head and flow data. Civil works and water rights are usually more decisive than the workshop equipment.

Component	Indicative range	Notes
Machining, turbine and generator assembly	US\$10m-35m	kW range and local scope
Controls, test rig and commissioning tools	US\$8m-28m	Protection/test requirements
Utilities, quality and installation	US\$5m-18m	Engineering/safety scope
Indicative strategic project total	US\$23m-81m	Civil works, penstock, land and finance excluded

Implementation sequence

Phase 1	2-5 weeks	Confirm product specification, representative raw material, buyer, capacity, site and utilities
Phase 2	3-7 weeks	Run supplier trials with the buyer material and freeze the balanced machine, tooling and utility scope
Phase 3	8-22 weeks	Manufacture or refurbish, inspect, document and ship the contracted equipment
Phase 4	3-12 weeks	Install, commission, train operators and pass material-specific acceptance tests

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

- pumps-compressors
- power-distribution-panel