

Prefabricated Household Biogas-Digesters Production Line

Complete Turnkey Business Proposal



Made-in-China supplier reference: real prefabricated household biogas-digesters production line equipment.

4-6 m3 launch size	1 kit controlled BOM	100% leak tested	5-9 entry workforce
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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

A micro/small fabrication and kit-assembly line producing one flexible household biogas-digester size from certified reinforced PVC-coated membrane through incoming roll inspection, digital patterning, guarded cutting, high-frequency or hot-wedge seam welding, port and reinforcement welding, dimensional inspection, low-pressure inflation and soap/decay leak testing, valve-hose-stove kit assembly, serial marking, user instructions and compact packing. It manufactures the digester kit; it does not operate a biogas farm.

Why this project fits Afghanistan

- Livestock manure is locally available in many Afghan rural households.
- A compact kit can reduce transport cost compared with rigid digesters.
- Local membrane cutting and kit assembly can support repair and spare parts.
- Gas-tight seams, pressure relief, safe stove use and cold-weather performance are essential.

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

Start with one 4-6 m³ flexible household kit and buy certified membrane, valves, hose, desulfurizer, pressure relief and stove components. Use one programmable cutting table or templates, one suitable HF/hot-wedge welder with proven seam width, port fixtures, a protected inflation/leak-test bay and traceable kit packing. Field-pilot at least 20 units through an Afghan winter and summer before volume sales.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Flexible household biogas-digester kit	Volume, membrane type/thickness, seam strength, leak rate, ports, relief, gas cleaning, hose, stove and installation manual	Rural households and small livestock farms after monitored field pilot

A flexible digester is a low-pressure gas appliance, not just a sewn bag. No stitched primary gas seams are allowed. Acceptance verifies membrane certificate, weld peel/shear, seam width, port pull-out, inflation pressure decay, valve operation and pressure-relief setting. The field kit needs safe siting, manure/water recipe, gas desulfurization, flame control, ventilation, condensate drainage and service instructions in local languages.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Roll inspection and pattern system	Controls membrane identity and yield	One 4-6 m3 design
2	Guarded membrane cutting table	Cuts repeatable panels	Templates or digital cutter
3	HF or hot-wedge welding equipment	Makes gas-tight structural seams	Qualified weld recipe
4	Port/reinforcement fixtures	Attaches inlet, outlet and gas ports	Pull-tested
5	Protected inflation/leak-test bay	Tests every completed digester	Low-pressure decay and soap test
6	Kit assembly and traceability station	Completes safe user package	Valves, relief, hose and stove

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 prefabricated household biogas-digesters production line equipment.



Made-in-China supplier reference: second real machine configuration for prefabricated household biogas-digesters production line.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Certified UV- and biogas-resistant reinforced PVC membrane
- Qualified ports, valves, pressure relief, hose and clamps
- Desulfurizer, condensate trap and approved low-pressure stove
- Repair patches, labels, manuals and cartons

Utilities & infrastructure

- Stable three-phase electricity with verified connected load
- Guarded machinery, lockout, ventilation and fire protection
- Covered segregated raw-material and finished-goods storage
- Maintenance tools, safe lifting and critical spare parts
- Clean membrane workshop without sharp contamination
- Ventilated isolated low-pressure test bay; no ignition sources

Quality, safety and environmental controls

- Verify every membrane and component certificate
- Record weld recipe, seam width and operator
- Test coupon peel/shear at defined frequency
- Inspect dimensions, ports and reinforcement
- Inflation/leak-test every digester and relief valve
- Audit complete kit, serial number and local-language safety manual

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

The low-entry factory welds one membrane-kit design and buys certified gas accessories. Rigid-tank moulding, farm construction and gas-use infrastructure are excluded.

Component	Indicative range	Notes
Cutting, welding and port fixtures	US\$12k-32k	One 4-6 m3 design
Inflation/leak testing and safety tools	US\$6k-16k	Every-unit test
Kit assembly, manuals and pilot tooling	US\$5k-13k	Purchased accessories
Freight, training and spares	US\$5k-12k	20-unit field pilot
Indicative installed low-entry total	US\$28k-73k	Building, membrane and component stock 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

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