



Lead-Acid Battery Manufacturing Plant

Complete Turnkey Business Proposal



Made-in-China supplier reference: real lead-acid battery manufacturing 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 lead-acid battery manufacturing that prepares lead oxide and paste, casts grids, cures plates, assembles cells, fills electrolyte, charges, tests capacity and packs automotive, UPS or industrial batteries with controlled lead exposure.

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

Develop only after legal lead sourcing/recycling route, stringent worker and environmental controls, acid handling, product standards, battery market/off-take, collection network, laboratory and experienced battery technical management are confirmed.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Lead-acid batteries	Voltage, Ah/CCA capacity, application, plate design, electrolyte, cycle life, reserve capacity, test standard and warranty	Automotive aftermarket, UPS/telecom, solar storage, generators, industrial users, distributors and fleet operators

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	Lead/oxide and grid preparation	Creates active battery materials	Lead purity and exposure control
2	Pasting/curing plate line	Builds charged plate structure	Paste density and cure
3	Assembly/welding/heat sealing	Forms battery cells	Weld and seal integrity
4	Electrolyte filling/formation	Activates battery	Acid density and charge
5	Capacity/leak/environmental laboratory	Releases batteries	Capacity, safety and emissions

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 lead-acid battery manufacturing plant equipment.



Made-in-China supplier reference: second real machine configuration for lead-acid battery manufacturing plant.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Lead and recycled lead under approved controls, lead oxide, antimony/calcium alloys, sulphuric acid, separators, polypropylene cases/lids, terminals, labels, packaging, treatment chemicals and laboratory consumables

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 legal lead/recycling, emissions permit, exposure monitoring, acid treatment, product warranty, collection system, buyers and qualified EHS leadership before procurement
- Control lead purity, paste formulation, plate cure, welds, sealing, electrolyte density, formation charge, capacity, leak, ventilation and waste streams
- Test voltage, capacity/CCA/reserve as applicable, internal resistance, leakage, terminal strength, acid density, cycle performance and lead/acid treatment compliance

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

Battery manufacturing is only credible with controlled lead recycling, worker protection, emissions treatment, robust testing and a real warranty/collection network.

Component	Indicative range	Notes
Lead/oxide, grid, plate and assembly systems	US\$35m-115m	Battery types and EHS scope
Formation, charging, testing and packing	US\$20m-70m	Capacity/quality output
Treatment, ventilation, lab and installation	US\$25m-90m	Lead/acid compliance critical
Indicative strategic project total	US\$80m-275m	Lead inventory, land, finance and working capital 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

- battery-recycling-line
- solar-inverter-assembly