

Pine-Nut Shelling & Grading Line

Complete Turnkey Business Proposal



Supplier reference: real compact nut shelling and separation machinery representative of pine-nut processing.

100-200 kg/h starter in-shell input	4 minimum size fractions	8-15 kW indicative connected load	7-10 entry operators
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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

This precision dry line cleans and size-grades Afghan pine nuts, conditions shell moisture where trials require it, cracks each size fraction, separates shell by air and gravity, then inspects and grades delicate kernels. Pine-nut kernels are easily broken and oxidized, so gentle handling and rapid dry packing are essential.

Why this project fits Afghanistan

- Afghan pine nuts are a high-value product worth processing close to origin.
- Precision shelling reduces loss of fragile kernels.
- Separate whole and broken grades serve different buyers.
- Vacuum bulk packing protects value during transport.

Sanaatchi delivery scope

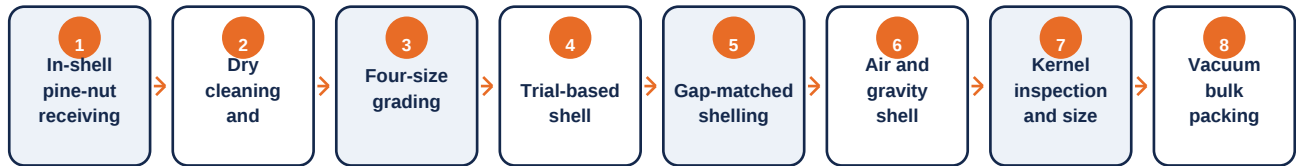
- Factory setup planning, supplier pre-qualification, and technical comparison
- Complete production-line and individual equipment supply
- Factory layout, utilities, civil-work coordination, installation, and commissioning
- Raw-material sourcing, trial-batch qualification, and repeat supply planning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

Recommended configuration

For the lowest credible entry, select a 100-200 kg/h line with cleaner, four-size grader, conditioning bins, adjustable sheller, aspiration and gravity separation, illuminated inspection, kernel grader and vacuum bulk packing.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Whole pine-nut kernels	Buyer-approved size, color, moisture, breakage and shell fragments	Premium retail, bakery and export buyers
Broken pine-nut kernels	Clean declared fraction protected from oxidation	Pesto, bakery and oil processors

Pine-nut shelling cannot safely use walnut settings. Narrow size grading, low-drop transfer and actual material trials are mandatory.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Cleaner and magnet	Removes dust, cones, stones and metal	Gentle dry aspiration
2	Four-size grader	Creates narrow shelling fractions	Screens matched to Afghan pine nuts
3	Conditioning bins	Equalizes shell moisture before cracking	Used only after trials
4	Adjustable pine-nut sheller	Opens shells with limited kernel damage	Separate setting per fraction
5	Air separator	Removes light shell	Fine variable airflow
6	Gravity separator	Recovers kernels and uncracked nuts	Low-drop return path
7	Inspection and kernel grader	Removes defects and creates grades	Gentle food-grade handling
8	Vacuum bulk packer	Limits oxygen exposure after release	High-barrier liners

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



Supplier reference: real compact nut shelling and separation machinery representative of pine-nut processing.



Supplier reference: real dry nut grading equipment applicable before precision shelling.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Dry traceable Afghan pine nuts
- High-barrier vacuum pouches or liners
- Labels and cartons
- Laboratory sampling materials

Utilities & infrastructure

- Stable three-phase electricity
- Food-grade heat source where required
- Clean compressed air where specified
- Ventilated washable processing room
- Dry allergen-controlled packing and storage

Quality, safety and environmental controls

- Confirm species, origin, moisture, infestation and rancidity
- Grade tightly before shelling
- Trial conditioning and cracker gaps on every lot
- Measure whole, broken, shell, uncracked and loss fractions
- Control shell fragments, metal and microbiology
- Minimize heat, oxygen, light and storage time

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

Lowest entry uses one adjustable sheller and manual inspection. Color sorting, retail packing, cold storage, building and inventory are excluded.

Component	Indicative range	Notes
Cleaning and four-size grading	US\$5k-12k	100-200 kg/h precision intake
Conditioning and shelling	US\$7k-18k	Adjustable gentle route
Air and gravity separation	US\$7k-17k	Fine kernel recovery
Inspection and vacuum packing	US\$5k-13k	Premium bulk launch
Freight, installation and spares	US\$5k-12k	Confirm low-drop layout
Indicative low-entry total	US\$29k-72k	Building, pine nuts and working capital excluded

Implementation sequence

Phase 1	2-3 weeks	Confirm raw-nut specification, product grades, capacity and packs
Phase 2	2-4 weeks	Run acceptance trials with representative Afghan nuts
Phase 3	5-9 weeks	Manufacture, inspect and ship the selected equipment
Phase 4	3-5 weeks	Install, train and validate yield, process and shelf life

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

- https://www.made-in-china.com/products-search/hot-china-products/Pine_Nut_Processing_Machine.html
- <https://machineryking.en.made-in-china.com/product/UvqnBpVlboRh/China-Pine-Nut-Sheller-and-Sorting-Machine-Pine-Nut-Cracking-Machine.html>