

Walnut Cracking & Kernel Separation Line

Complete Turnkey Business Proposal



Supplier reference: real adjustable nut cracking and shell-separation machinery representative of walnut processing.

300-400 kg/h starter in-shell input	3 minimum shell-size fractions	12-18 kW indicative connected load	6-9 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

A dry line for size grading Afghan walnuts, gap-matched cracking, vibration and air shell separation, inspection and kernel grading. Whole-half recovery depends on walnut variety, shell hardness, moisture and pre-grading; supplier claims must be proven with actual Afghan lots.

Why this project fits Afghanistan

- Afghan walnuts gain value as clean graded kernels.
- Size grading protects half-kernel recovery.
- Broken kernels remain a marketable oil or butter grade.
- Compact dry equipment suits seasonal aggregation.

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 300-400 kg/h line with cleaner, three-size grader, adjustable cracker, shell-kernel separator, inspection conveyor, kernel grader and semi-manual bulk packing.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Walnut halves and quarters	Buyer-approved size, moisture, color and shell fragments	Retail, bakery and confectionery buyers
Broken walnut kernels	Clean declared fraction with controlled shell content	Oil, butter and bakery processors

Walnut geometry varies more than almond geometry. Acceptance must use several local size fractions and report real half-kernel recovery rather than a single advertised shelling percentage.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Pre-cleaner and magnet	Removes dust, stems, stones and metal	Enclosed dry aspiration
2	Three-size walnut grader	Creates fractions for cracker settings	Screens matched to local walnuts
3	Adjustable walnut cracker	Opens shells while protecting kernels	300-400 kg/h reference
4	Vibratory separator	Separates large shell and kernel fractions	Interchangeable screens
5	Air shell separator	Removes light shell pieces	Variable airflow
6	Return elevator	Returns unopened walnuts for another pass	Low-drop kernel protection
7	Inspection and kernel grader	Removes defects and creates sale grades	Food-grade belt and screens
8	Detector and bag closer	Checks and packs released kernels	Lined bulk packs

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 adjustable nut cracking and shell-separation machinery representative of walnut processing.



Supplier reference: real dry grading and separation equipment applicable to walnut kernel recovery.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Dry traceable Afghan walnuts
- Food-grade lined bags or cartons
- Labels and lot records
- 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 variety, shell hardness, moisture and infestation
- Grade shells before every cracking pass
- Measure halves, quarters, broken, shell and uncracked mass balance
- Control shell fragments, stones and metal
- Test rancidity, mold, aflatoxin risk and microbiology
- Maintain allergen segregation and dry pest-controlled storage

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 three size fractions and manual inspection. Optical sorting, kernel washing, retail nitrogen packing, building and walnut inventory are excluded.

Component	Indicative range	Notes
Cleaning and size grading	US\$4k-9k	300-400 kg/h dry intake
Cracking and shell separation	US\$6k-14k	Adjustable staged route
Inspection and kernel grading	US\$4k-9k	Manual final quality gate
Packing and quality tools	US\$3k-7k	Semi-manual bulk launch
Freight, installation and spares	US\$4k-9k	Confirm conveyor nesting
Indicative low-entry total	US\$21k-48k	Building, walnuts 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

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