



Cement Production Line

Complete Turnkey Business Proposal



500 t/day class cement rotary kiln reference

100-300 entry tons per day	Phased capacity growth	50 kg common bag format
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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 proposal presents a dry-process mini cement plant centered on controlled limestone crushing, raw-meal preparation, preheating, rotary-kiln clinker production, cooling, finish grinding and bagging. A 300-500 ton/day configuration provides a practical reference point, while the final design must follow limestone chemistry, fuel availability, environmental permitting and market demand.

Why this project fits Afghanistan

- Cement is a strategic input for housing, roads and public infrastructure.
- Domestic clinker and cement capacity can reduce exposure to cross-border supply disruption.
- Afghanistan has limestone resources that warrant location-specific geological and chemical assessment.
- Bulk and bagged product options serve ready-mix, block, precast and retail channels.

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

Phased 100-300 tons/day dry-process mini cement plant using economical Chinese machinery, local civil works and semi-automatic bagging, expandable toward 500 tons/day after market validation.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Ordinary Portland cement	Market grade subject to local standard	General construction
High-early-strength cement	Adjusted clinker and gypsum recipe	Precast and fast-track works
Blended cement	Clinker plus approved mineral additions	Cost and durability applications
Bulk cement	Tanker dispatch	Ready-mix and block factories

Limestone, clay, corrective materials and fuel must be tested before process selection. Kiln heat balance, emission limits, quarry life, electrical load, water availability and transport distances dominate project economics. This proposal is therefore a feasibility framework, not a final EPC quotation.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Apron feeder and crusher	Receive and reduce limestone	80-150 t/h reference
2	Preblending stacker	Stabilize quarry variation	Covered stockpile
3	Raw mill	Dry and grind raw meal	35-40 t/h reference
4	Homogenizing silo	Equalize raw-meal chemistry	Aerated blending
5	Cyclone preheater	Recover kiln exhaust heat	Multi-stage
6	Rotary kiln	Form cement clinker	3.0 x 45 m; 160 kW class
7	Clinker cooler	Cool clinker and recover heat	Grate cooler
8	Cement mill	Grind clinker, gypsum and additions	Closed circuit
9	Storage silos	Store cement grades	Aeration and level control
10	Packing and palletizing	Fill and dispatch bags	Rotary packer; 25-50 kg
11	Dust collectors	Control particulate emissions	Bag filters at all transfer points

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



500 t/day class cement rotary kiln reference



Rotary-kiln shell, supports and drive arrangement



Kiln production equipment reference

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Chemically suitable limestone
- Clay, shale or laterite corrective feed
- Iron-bearing corrective material where required
- Gypsum for set control
- Approved mineral additions for blended cement
- Coal, gas, oil or alternative fuel after feasibility study

Utilities & infrastructure

- Stable high-voltage electrical supply and substation
- Kiln fuel receiving, storage and dosing
- Quarry haul roads and heavy vehicle access
- Process laboratory and control room
- Compressed air, cooling water and fire protection
- Continuous dust monitoring and environmental controls

Quality, safety and environmental controls

- Quarry and raw-meal XRF chemistry control
- Kiln temperature, draft and free-lime monitoring
- Clinker mineralogy and strength testing
- Cement fineness, setting time and compressive strength
- Bag weight verification and traceable lot coding
- Dust, NO_x, SO_x and workplace-exposure management

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

Afghanistan entry case: economical Chinese equipment, locally fabricated noncritical items, local civil works and labor, phased automation, and land excluded. Optional automation can be added after sales are established.

Component	Indicative range	Notes
Entry process equipment	US\$1.5m-4m	100-300 t/day economy configuration
Local civil, quarry and utilities	US\$0.6m-1.8m	Local labor and simple buildings; land excluded
Freight, erection, commissioning	US\$0.4m-1.2m	Supplier supervision plus local erection team
Laboratory and initial spares	US\$0.1m-0.3m	Basic QC laboratory and critical spares
Working capital	US\$0.3m-0.8m	Fuel, quarry operation, bags and launch inventory
Low-entry project total	US\$2.9m-8.1m	Phased mini plant; final kiln scope controls cost

Implementation sequence

Phase 1	2-4 months	Geology, chemistry, market and environmental studies
Phase 2	3-5 months	Basic engineering, permitting and financing
Phase 3	8-14 months	Detailed engineering and equipment manufacture
Phase 4	8-14 months	Civil construction, delivery and erection
Phase 5	1-3 months	Cold tests, kiln heat-up, performance trials and training

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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