SANAATCHI
INDUSTRIAL VISION GROUP

Automated 20-100 MW Solar-Module Factory

Complete Turnkey Business Proposal

Made-in-China supplier reference: real automated 20-100 mw solar-module factory equipment.

20-50 MW/year entry screen	**1 module format** controlled launch	**imported cells** core input	**35-80** workforce

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 module-assembly factory converting purchased qualified cells, glass, EVA/POE, backsheets, frames, junction boxes and cables into a defined photovoltaic module family through cell sorting, stringing, lay-up, lamination, trimming, framing, junction-box potting, EL inspection, flash testing, hi-pot testing and packing. It does not manufacture solar cells.

Why this project fits Afghanistan

- Module assembly can localise frames, labour and distribution while cells remain imported.
- Cell quality, lamination recipe and EL testing decide long-term warranty risk.
- One module format controls inventory and certification cost.

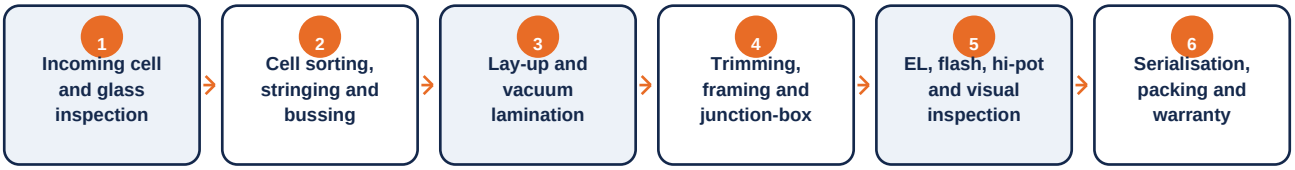
Sanaatchi delivery scope

- 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 20-50 MW mono module format. Validate tier-qualified cell supply, clean dry assembly area, lamination recipe, EL/flash-test calibration, warranty reserve, traceability, IEC certification route and contracted distributors or EPC buyers.

Manufacturing Process & Product Portfolio

Integrated process flow



Target products

Product	Typical specification	Primary market
Crystalline PV modules	Wattage, cell format, efficiency, EL defects, insulation, flash-test result and serial traceability	Afghan solar EPCs, distributors, telecom and commercial power buyers

A supplier must prove the defined process with representative material, utilities and documented acceptance testing.

Core Equipment Schedule

Step	Equipment	Function	Indicative parameter
1	Cell tester, stringer and lay-up station	Builds repeatable cell strings	One module format
2	Vacuum laminator and trimming	Encapsulates module stack	Validated lamination recipe
3	Frame/junction-box assembly	Completes protected module	Approved frame and box
4	EL, flash and hi-pot testers	Releases safe rated output	Calibrated acceptance tests

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 automated 20-100 mw solar-module factory equipment.

Made-in-China supplier reference: second real machine configuration for automated 20-100 mw solar-module factory.

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

Plant, Raw Materials & Utility Requirements

Raw materials

- Tier-qualified solar cells, tempered glass, EVA/POE, backsheets, frames and junction boxes
- Cables, sealants, labels, cartons and pallets

Utilities & infrastructure

- Stable three-phase electricity with verified connected load
- Guarded machinery, lockout, ventilation and fire protection
- Covered raw-material and finished-goods storage
- Maintenance tools, safe lifting and critical spare parts
- Clean dry assembly, stable power, compressed air and test-equipment calibration
- ESD controls, glass handling, adhesive ventilation and serialised traceability

Quality, safety and environmental controls

- Inspect cells for cracks and bin by electrical class
- Record lamination recipe, frame torque and junction-box cure
- Run EL, flash, insulation, hi-pot, visual and serial-number checks

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

Use a single certified module format and imported tier-qualified cells; cell manufacturing is a separate high-capital semiconductor project.

Component	Indicative range	Notes
Stringing, lay-up and lamination	US$500k-1.5m	20-50 MW/year
Framing, junction boxes, EL/flash testing	US$350k-1m	One module format
Clean area, certification, installation and spares	US$250k-800k	Warranty quality system
Indicative project total	US$1.1m-3.3m	Land and cell 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

- https://www.alibaba.com/showroom/solar-module-production-line.html
- https://www.made-in-china.com/products-search/hot-china-products/Solar_Panel_Production_Line.html