



STRENGTHENING SUPPLY CHAINS

WITH THE RIGHT QUALITY

EXPLORING DOMESTIC AND GLOBAL OPPORTUNITIES FOR RESILIENT PROCUREMENT



Present By :
Kayan Kalthia



KOSOL is a global leader in solar photovoltaic (PV) technology, delivering high-efficiency solar modules powered by advanced crystalline innovations. With an annual supply capacity of 5.6 GW by FY'27, KOSOL serves customers worldwide while driving the transition to clean energy. Guided by a commitment to innovation, quality, and sustainability, the company provides cost-effective solar solutions that create long-term value for businesses and communities.



2012

Year Established

1300+

Total Employees

3.28 BT

CO2 Emission Saving (Tonne/Year)

ISOCertified



ISO :2015



ISO :2018



9001 :2015

Founded in 1984, we have been a pioneering leader in solar solutions, offering comprehensive 360-degree products and services under a single umbrella. We consistently invest in cutting-edge technology and innovations embodying our commitment to **#empowering solarliving**

No.1



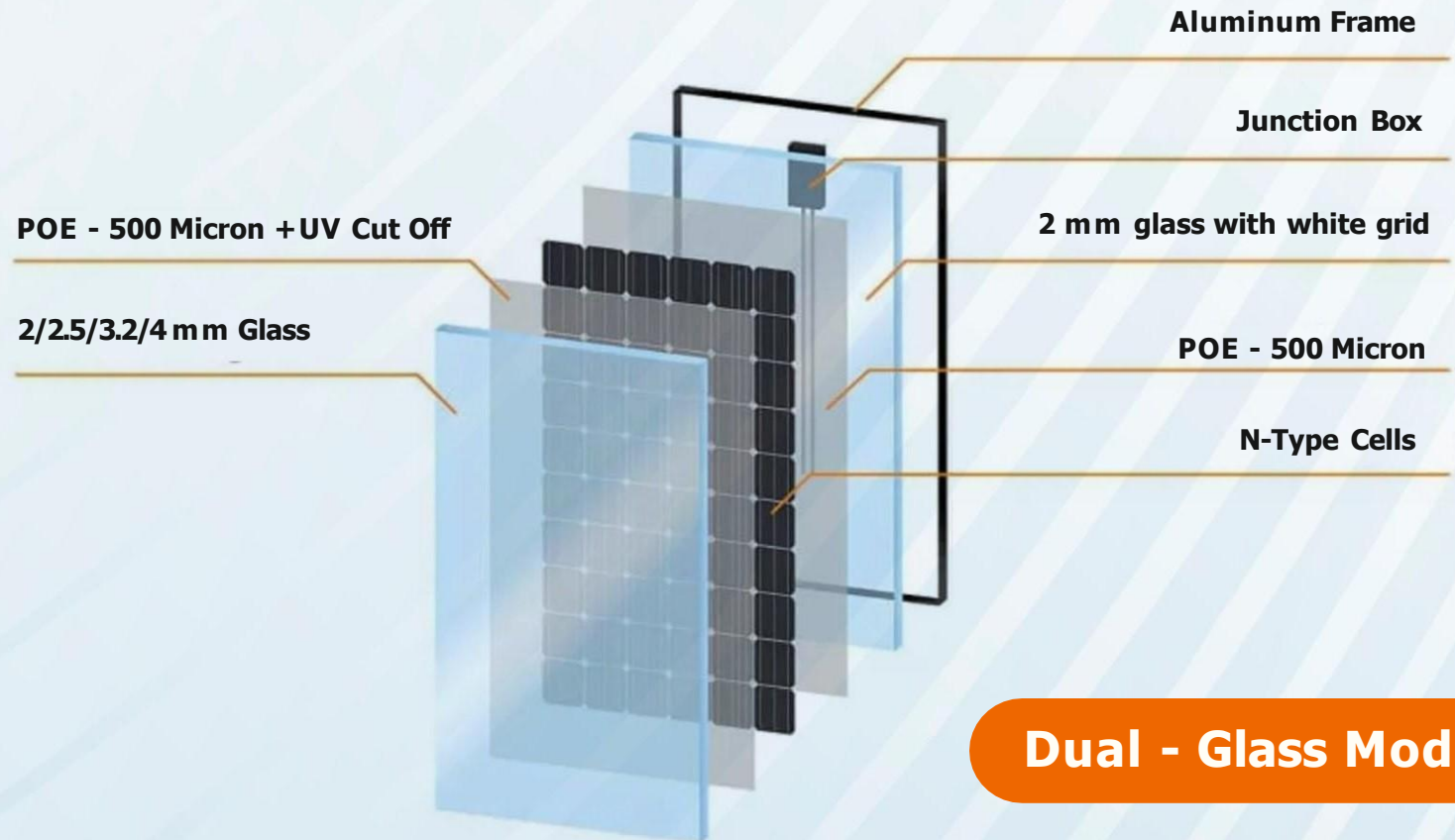
KOSOL's Cellular Hive

All Solar Product Solutions

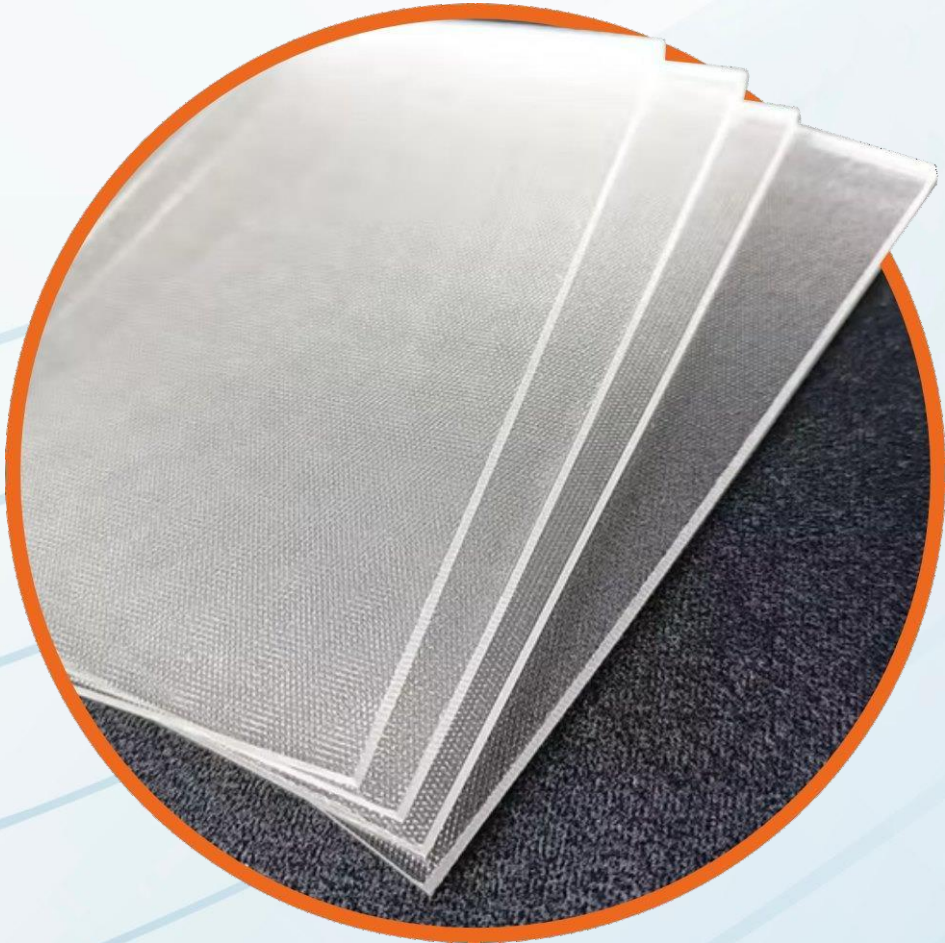
Quality Panel - Perks

Quality BOM

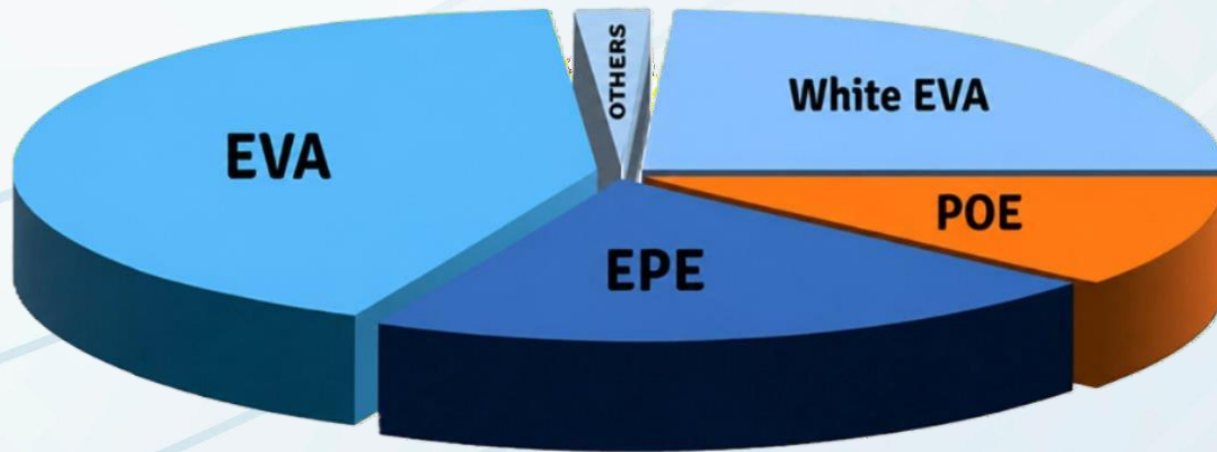
- Higher Transparent Glass ARC 2 (94.3 % above)
- POE - POE Encapsulate N type / HJT cell



Dual - Glass Module



- All glass are with ARC 2 > 94 %transmissivity
- Glass edge treatment ≥ 70 MPa Bend Strength
 - Only **heat tempered** no chemical tempered
- For Glass to Glass panels - Front 2.0/2.5/3.2/ 4mm ARC coated & toughened glass



Majority supplier preference EPE, as price concerned.
High grade POE is important for **N-type technology**
Glass to Glass PV Panels

Encapsulant - POE

Highest GSM with high thickness 500 & 550 micron encapsulation in the industry, leading to excellent gel content

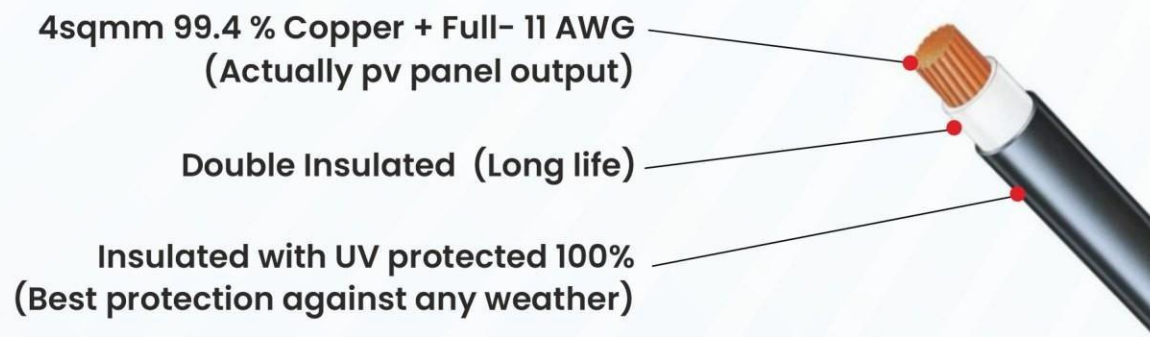
POE has high durability

- UV resistant
- Resistant to moisture ingress
- Excellent sealing
- Reduced yellowing
- Low delamination risk

Top and bottom POE, difference creating higher power, and life

- Special junction box with compatible current rating with respective technology
- Completely vertically integrated
- IEC, UL certified connector, cable & J-Box

Junction Box



Kosol Indian - Facility

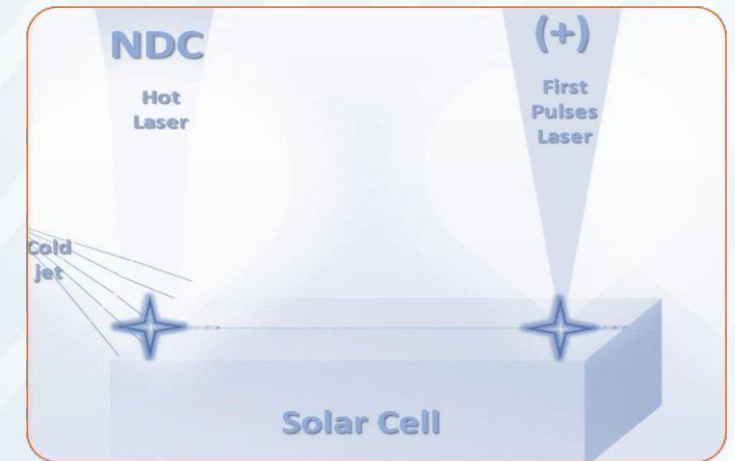
3.10 GW + 2.5 GW (ISO certified & UL approved).

Today - Manufacturing Excellence :

- Hi Speed Stringer with In built NDC + scribe
- Automation Accuracy with 0.02mm
- 6 x EL Stages (3x EL industry standards)
- Auto second glass loader for G to G panels & 2nd Edge trimmer
- CCD inspection for potting & frame silicon dispensing
- 8 total binning for optimum generation

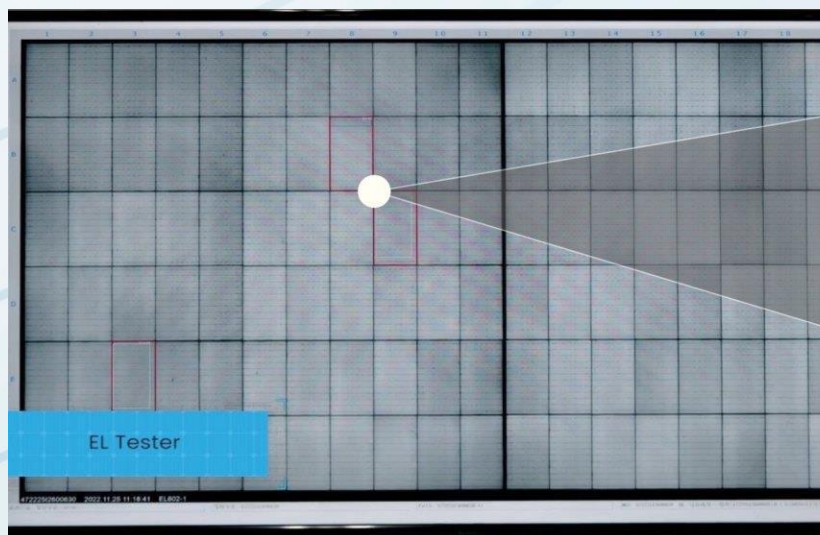
NDC⁺ Cell Cutting

- NDC cutting (in-built) ensures cell edges have no micro-cracks & (+)Plus giving additional protection during cell cutting process as essential for Topcon & HJT thin cell (< 130 μm)
- Traditional cutting uses scribing and mechanical breakage
- Traditional NDC will lead to damage front coating of solar cells compare to NDC⁺ technology



AI & Advanced Manufacturing

- All of our machines have AI built into them to ensure by red marking issues, even if the operator misses it.
- Traditionally not done, but as cell thickness is **130 μm** if human error occurs and manpower is inattentive and lets issue pass as **150 modules/ hr**, or **2.5 modules/min**. At 6 stage level of EL and Visual with **AI system**.



AI - Camera Detection

Dual Side Heated **Electrical Laminator**

- Traditionally Oil, and single side, however electric heating leads to more even heating and dual side ensures even heating
- This is Double layer & Double chamber specialized electric heating laminator



New Vertical Packaging (optional)

There layer and dense honey comb with **approx. 7 Ply (8.5 mm)** thickness using for good protection of solar panel transportation for vertical / horizontal types of packaging.

Key Advantages

- 13% Extra Watt Power Shipping
- Easy To Handling Without Cell Micro Crack
- Quick Load & Unloading
- No Stacking Happen



External Quality Partners

CONTENT

➤ Scope, Pass/Fail Criteria

Material Control	65 Requirements
Production Control	75 Requirements
Dispatch Control	23 Requirements
Product Quality	150 Criteria

➤ Inspections & Tests

Pre-production Assessment	3 Stages
Production	24/7 Monitoring
Pre-shipment Inspection	6 Tests Required
Laboratory Tests	26 Optional Tests Available
Container Loading	100% Witness

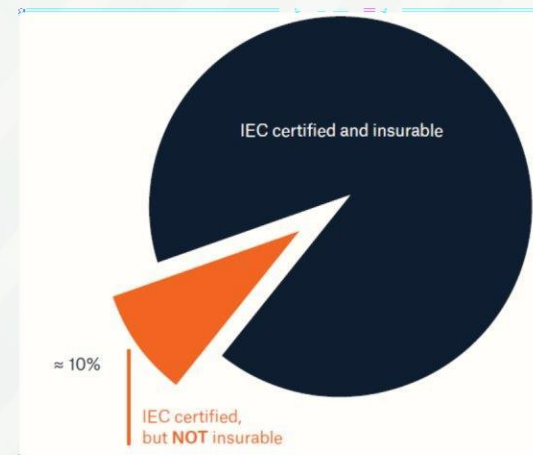


30-year warranty insured by Munich Re/Arial Re/ Swiss Re, supported by their due diligence and risk-mitigated manufacturing process.

The 13 Facets of the Munich Re Scoring System :



Insured Warranty



- 10-15 Nos. only PV manufacturers are qualifying world wide for insurance every year.
- 30Years Warranty Insurance cover, as bankability solution instead of tier 1 quarterly listing.

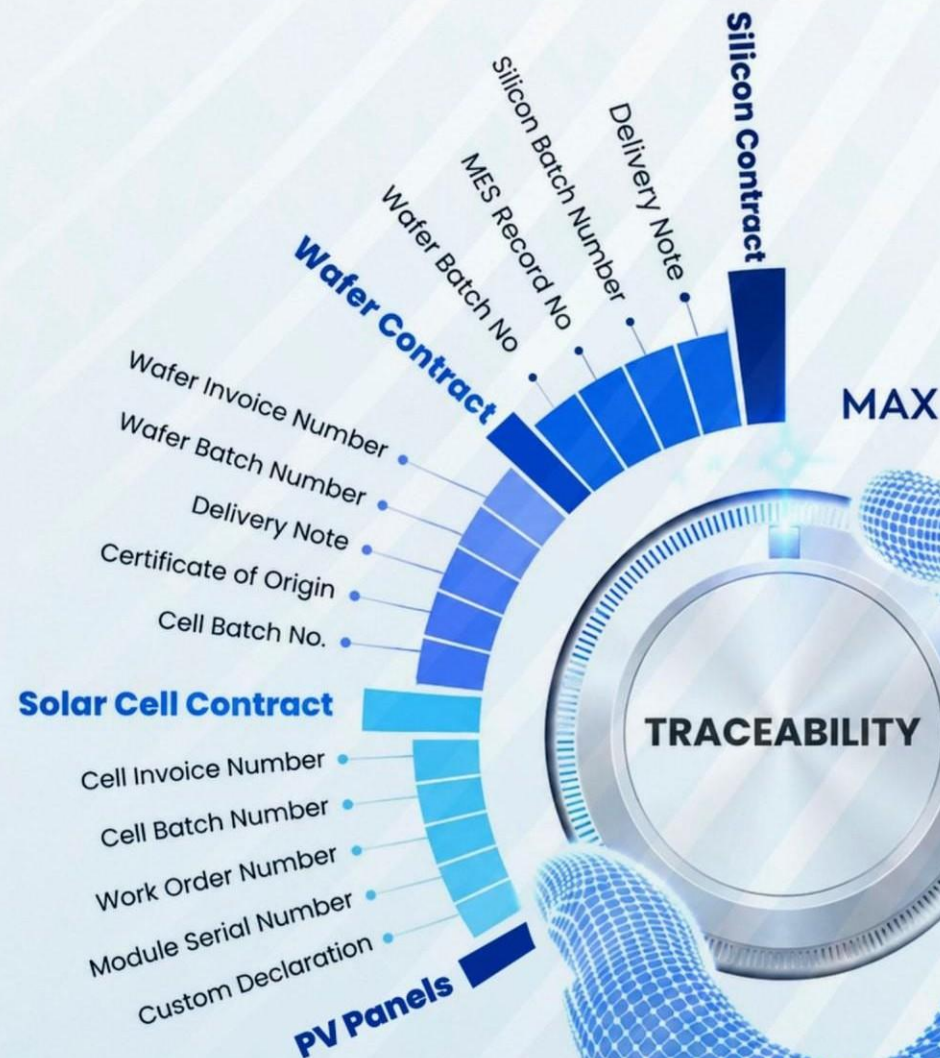
*Process showcase as example from Munich Re

KOSOL's Panels Traceability

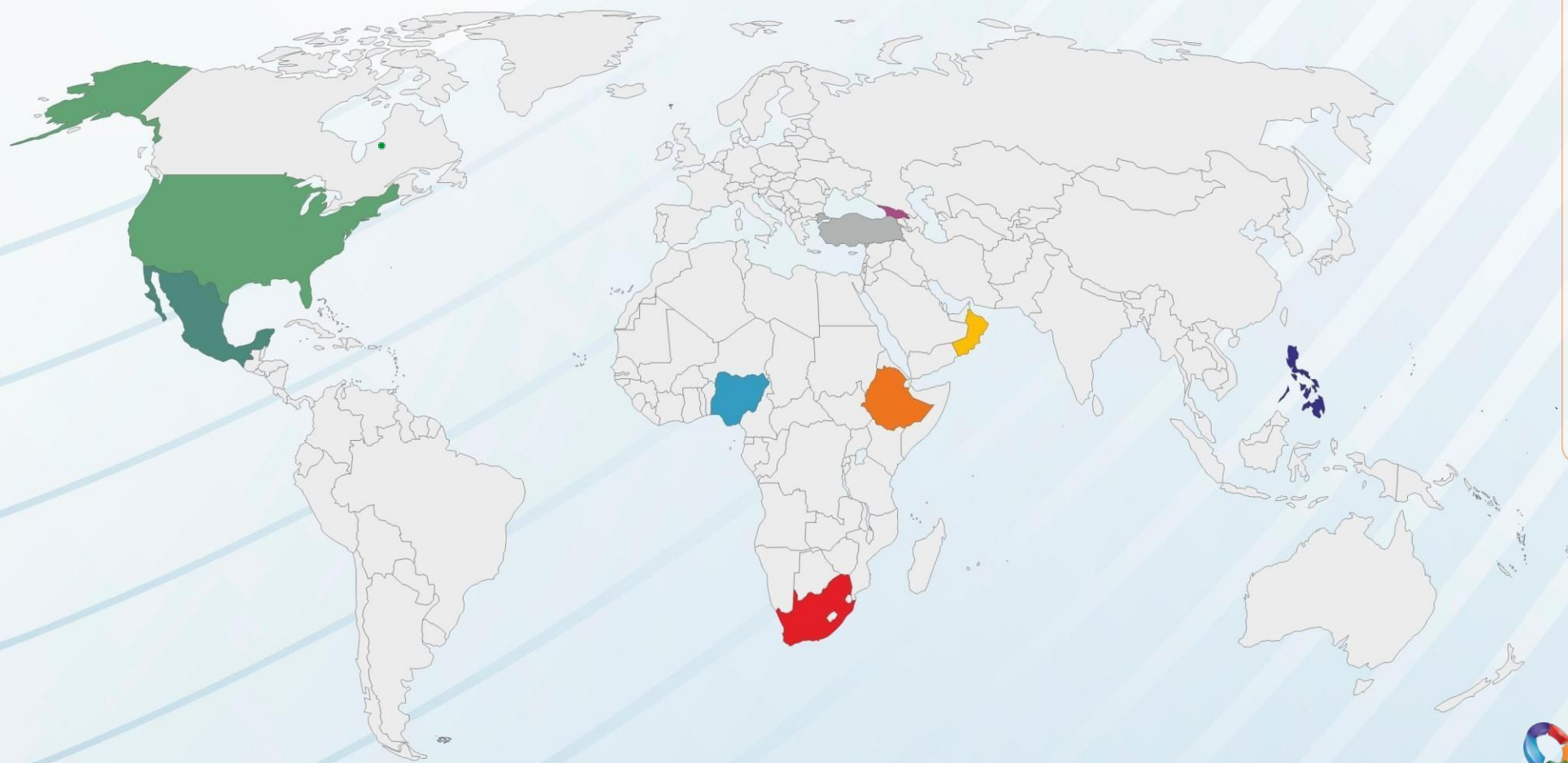
Compliance Standard Practice:

- Sec 301
- AD/CVD
- UL/FPA
- Sec 232

External Supporting Partners :



Strategic Cell Supply Chain



- Kenya : 2.5 GW
- Nigeria : 3 + 2 GW
- South Africa : 3 GW
- Oman : 5 GW
- Turkey : 3 GW
- Georgia Republican : 15 GW
- Mexico : 2.5 GW
- Philippines : 1.5 + 1.5GW
- USA : 2.5 + 3 GW

Supplier Assignment Verification

Factory Audit (Kosol) :

Assessment of Quality, Production, Logistics, Technical, R&D, HSE, Service, Communication, & Sample Evaluation.

ISO Verification :

Validate applicable ISO certifications.

FEOC Compliance :

Review and confirm FEOC declaration/letter.

Sampling Verification :

Ensure product sampling is completed as required.

Third-Party Audit :

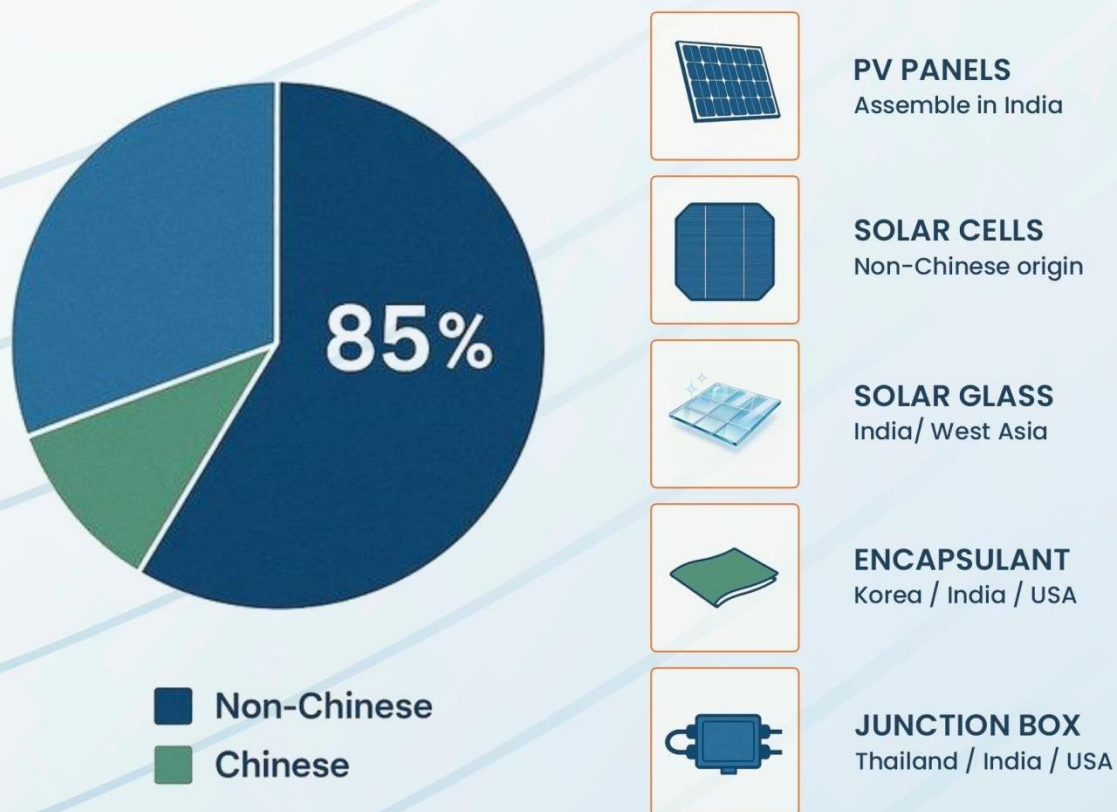
Confirm independent audit completion.

Lot/Batch Traceability :

Verify end-to-end traceability for each lot/batch through the supply chain.

Solar PV Panel Supply Chain

85% NON-CHINESE SUPPLIERS



Supporting Partner :



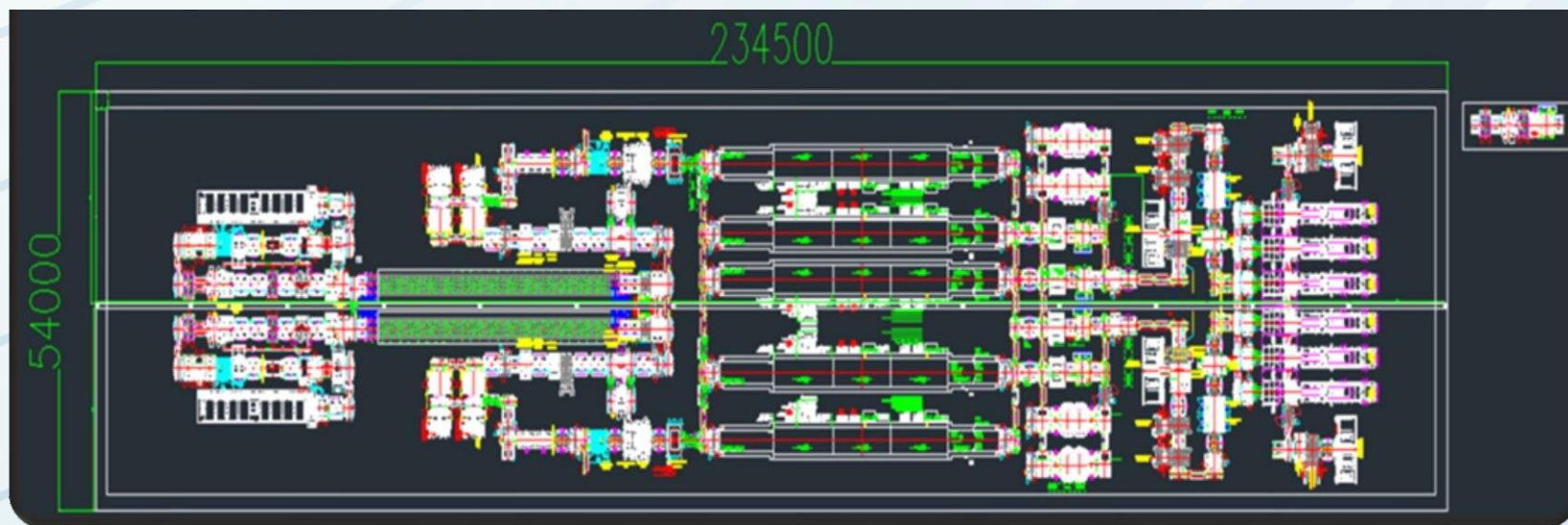
Key Benefits

- Diversified supply chain reduces geopolitical risks
- Premium quality components from trusted global sources
- Strategic partnerships with leading manufacturers
- Supporting global manufacturing excellence

2 GW Automation Floor Plan - USA

(Compatible : Topcon, Back contact-IBC, HJT, Tandem technology) 2027-Q2

A state-of-the-art 2GW production line with a output speed of 20 sec/panel, producing AAA+ quality panels that are UL & ISO approve facility. This production line requires 25% less manpower and is 33% more compact production line diagram.



6000 KVA
(Power Connection)



3150 CFM
(Air Compressor)



5000 KVA
(Power Transformer)



850 Tonne
(HVAC)



THANK YOU

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