NEXERAECO PRESENTS

SOLARXITE

DUAL-AXIS Sun TRACKING FOR RESIDENTIAL ROOFTOPS

Early-Stage Climate Tech Hardware | TRL-4 Laboratory Validation

Design Patent Granted (Sep 2024)

Founder: Praveen Kumar

THE EFFICIENCY CEILING

Why fixed solar panels are holding back the energy transition on our rooftops.

THE PROBLEM STATEMENT

- **Peak Efficiency Window:** Fixed panels operate at peak efficiency for only a short duration daily.
- **Energy Loss:** Suboptimal sun alignment causes 25–30% energy loss.
- **Urban Shading:** Nearby buildings and structures further reduce output in dense areas.
- **Space Constraints:** Rooftop size prevents adding more panels to compensate.

WHY THIS PROBLEM MATTERS

- PM Surya Ghar: Residential rooftop capacity in India is growing rapidly; efficiency is now the priority.
- Economic Impact: Efficiency loss directly increases payback periods and slows consumer adoption.
- 2030 Targets: India requires better utilization of *installed* capacity, not just land expansion.

THE PROPOSED SOLUTION

SOLARXITE DUAL-AXIS TRACKING

Designed specifically for residential rooftops (3–5 kW systems), SolarXite breaks the static barrier.

- Dynamic adjustment based on real-time conditions.
- Lightweight for limited structural load capacity.
- Maximum generation per square foot.

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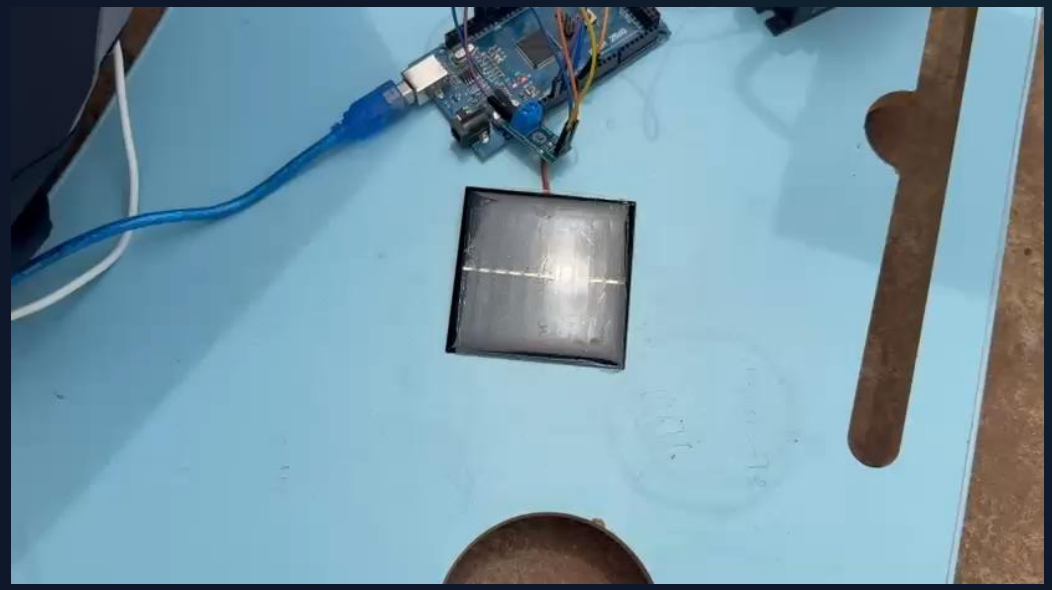
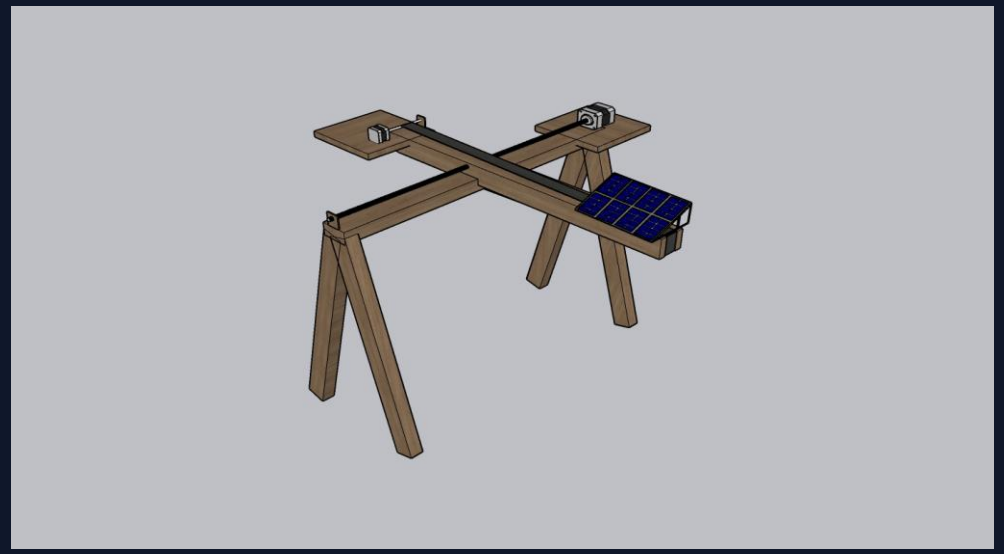




CORE TECHNOLOGY

Photovoltaic Sensors

Advanced voltage sensors detect voltage. Confirms how much light is falling on the panel

EMBEDDED CONTROLLER

Sensing-based control enables continuous orientation adjustment in response to real-time light conditions

MOTORIZED ACTUATION

High-efficiency motors adjust panel direction and movement with low power consumption.

Reactive tracking vs. Pre-programmed sun paths: A breakthrough in urban shading adaptation.

INNOVATION & DIFFERENTIATION

RESIDENTIAL-FIRST DESIGN

Not a scaled-down utility tracker. Engineered for Indian residential roof profiles and load limits from day one.

Reactive Control Behaviour

Sensing-based behavior enables the system to "find" light even in complex shading environments of dense cities.

TECHNOLOGY READINESS

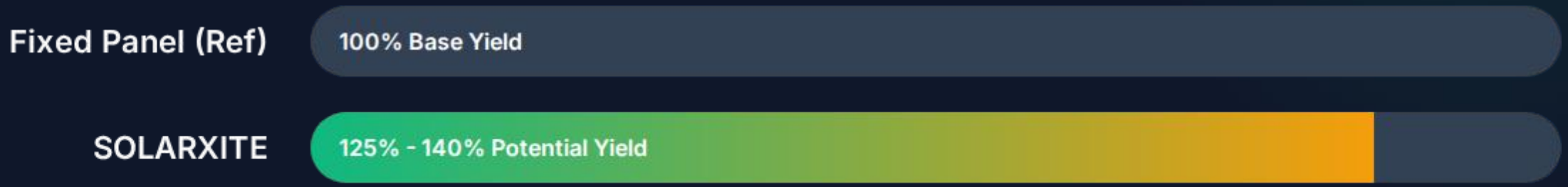
TRL-4

Laboratory Validation

CURRENT STATUS

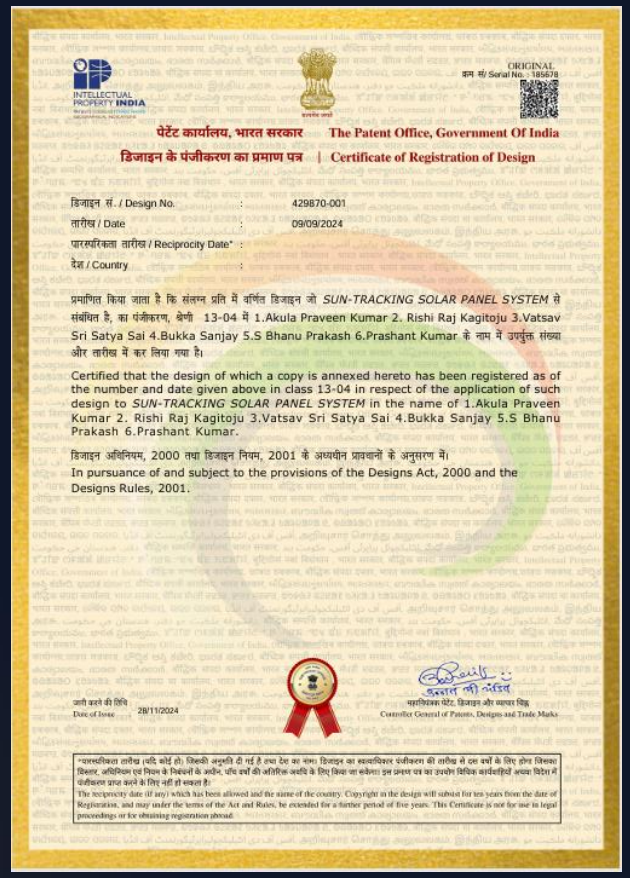
- Functional laboratory-scale prototype developed.
- Core subsystems validated (Sensing, Logic, Motors).
- Preliminary experiments indicate high potential yield.

PRELIMINARY PERFORMANCE



"**Indicative outcome from controlled-condition experiments:** 25–40% potential improvement…".

INTELLECTUAL PROPERTY



INTELLECTUAL PROPERTY INDIA

ORIGINAL

क्रम सं/ Serial No. : 185678

पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 429870-001

तारीख / Date : 09/09/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *SUN-TRACKING SOLAR PANEL SYSTEM* से संबंधित है, का पंजीकरण, श्रेणी 13-04 में 1.Akula Praveen Kumar 2. Rishi Raj Kagitoju 3.Vatsav Sri Satya Sai 4.Bukka Sanjay 5.S Bhanu Prakash 6.Prashant Kumar के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 13-04 in respect of the application of such design to *SUN-TRACKING SOLAR PANEL SYSTEM* in the name of 1.Akula Praveen Kumar 2. Rishi Raj Kagitoju 3.Vatsav Sri Satya Sai 4.Bukka Sanjay 5.S Bhanu Prakash 6.Prashant Kumar.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि
Date of Issue : 28/11/2024

नियंत्रक महा पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

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The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

DESIGN PATENT GRANTED

Patent No: 429870-001 (Sep 2024)

- Physical & structural configuration protected.
- Visual layout of the tracking mechanism.
- → Utility patent filing planned after TRL-5 validation.

TARGET USERS

SOLAR EPCS

Partners seeking high-performance hardware solutions.

RESIDENTIAL OWNERS

Homeowners with 3–5 kW systems looking for efficiency.

DEVELOPMENT ROADMAP

CURRENT (TRL-4)

Lab Prototype & Subsystem Validation

NEXT (TRL-5)

Outdoor Testable System & Durability Hardening

PILOT (TRL-6)

Outdoor Performance Data & Pilot Prototypes

MARKET READY

EPC Integration & Early Deployments

FUNDING REQUIREMENT

TOTAL SEEKING: ₹10 LAKH (SEED / GRANT)

Allocation Category	Share (%)	Primary Objectives
Prototype Refinement	60%	Outdoor validation & TRL-5 transition
Mechanical & Electronics	25%	Component optimization & manufacturing prep
Certification	10%	Compliance & field certification prep
Operations	5%	Admin & patent filing management

THE FOUNDER

PRAVEEN KUMAR

Founder & Systems Architect – NexEraEco

- Expert in embedded systems and control logic.
- Background in sensor-driven automation systems.
- Vision: Practical, low-cost clean energy hardware.

Advancing from TRL-4 to TRL-6

THANK YOU

NexEraEco: Maximizing Rooftop Potential

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Seeking Strategic Partnerships & Technical Support