



**EMPOWERING INDIA's GROWTH  
WITH DRONE INTELLIGENCE**

# FROM PANEL INSPECTION TO PERFORMANCE OPTIMIZATION – SMARTER SOLAR MANAGEMENT

## About Us

Vaaru Robotics provides advanced drone solutions to maximize solar farm productivity, reduce maintenance costs, and ensure energy output. Our AI-driven inspections deliver precise data—faster and safer than manual methods.

## Our Achievements

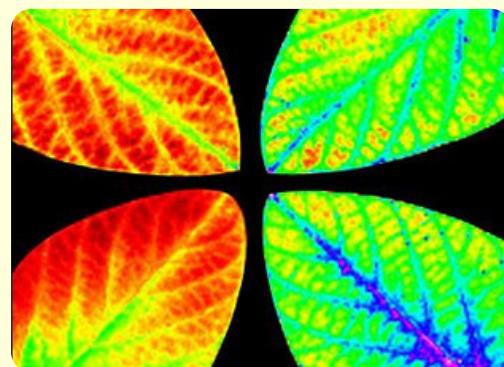
**200+ MW**  
solar capacity inspected

**5,000+**  
Flying Hours

**99%**  
defect detection accuracy

## Why Us ?

- ✓ **Solar-Specialized Expertise:** Trusted by leading renewable energy firms.
- ✓ **Regulatory Compliance:** Certified pilots and insured operations.
- ✓ **AI-Powered Analytics:** Real-time insights for proactive maintenance.



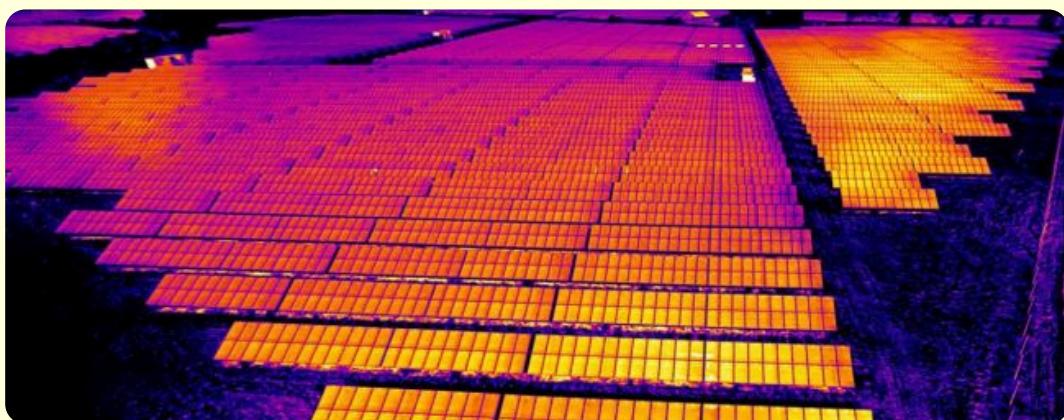
# Key Services

## 1. Solar Panel Inspection

- **Fault Detection:** Identify micro-cracks, hot spots, and defective cells using thermal/HD imaging.
- **Soiling Analysis:** Detect dust, bird droppings, or shading impacting efficiency.

## How Drones help

- **Thermal Imaging:** Pinpoint hotspots and under-performing panels.
- **AI-Powered Analytics:** Classify defects by severity (critical/moderate/minor).
- **Automated Reports:** Generate repair tickets with GPS coordinates.



## 2. Performance Benchmarking

- **Energy Loss Mapping:** Correlate defects with power output data.
- **Degradation Tracking:** Monitor panel wear over time.

## How Drones help

- **PV Analytics Software:** Integrate drone data with SCADA/sensor systems.
- **Trend Dashboards:** Visualize performance dips by zone/panel.



### 3. Structural & Mounting Inspection

- **Corrosion Detection:** Assess racking, bolts, and foundations.
- **Alignment Checks:** Ensure optimal tilt/azimuth angles.

## How Drones help

- **3D Modeling:** Reconstruct mounting structures for defect analysis.
- **LiDAR Scanning:** Detect subsidence or misalignments.



## 4. Vegetation & Land Management

- **Shading Analysis:** Map tree/weed encroachment in real-time.
- **Erosion Monitoring:** Track soil stability near arrays.

## How Drones help

- **Multispectral Imaging:** Assess vegetation health near panels.
- **Automated Alerts:** Flag urgent clearance needs.

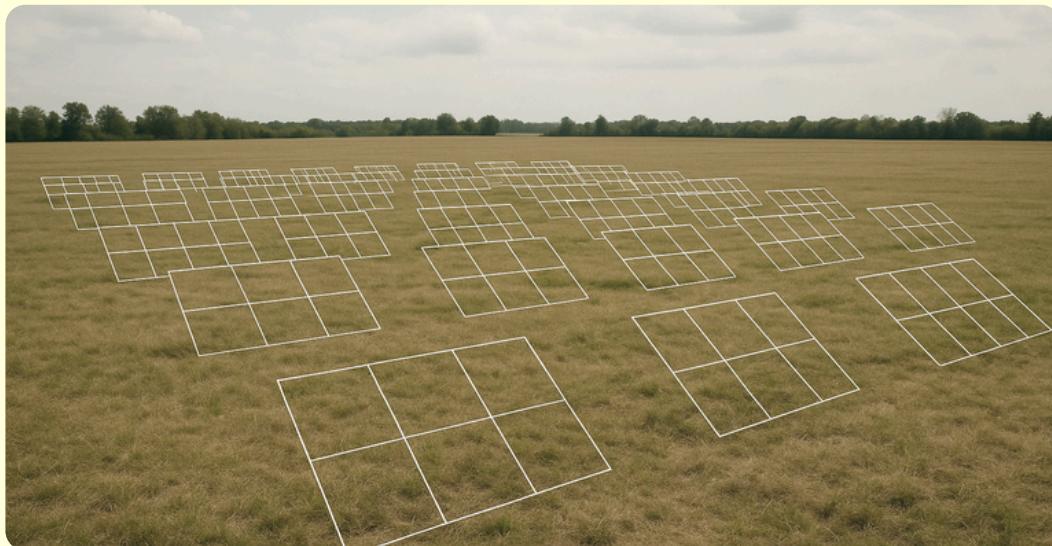


## 5. Pre-Installation & As-Built Surveys

- **Site Planning:** Generate terrain models for optimal panel placement.
- **As-Built Verification:** Compare installed layouts with design plans.

## What we deliver

- **BIM Integration:** Overlay drone data on CAD models.
- **High-Res Orthomosaics:** For O&M documentation.



**ONE PARTNER FOR BOTH YOUR  
PANEL HEALTH & POWER  
PERFORMANCE**

**THANK**  
*Be the part of our family*  
**YOU**

**Tech + Energy Insight:** Our team blends drone tech with solar expertise.

**Rapid Results:** Detect panel faults & energy loss in record time.

**Efficient Scaling:** Save time, power, and manpower in every megawatt.



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