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Acceleration Program 2026



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AREA: Renewable energy generation

CHALLENGE: Advanced O&M for Photovoltaic Plants

How could we detect and prioritize issues in photovoltaic plants using drones/robotics and advanced analytics, reducing travel and manual inspections, and increasing recovered energy production and O&M efficiency?

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ADVANCED O&M FOR PHOTOVOLTAIC PLANTS

Why this challenge matters

Estabanell Generació currently operates 5 photovoltaic plants and expects to reach 13 operational plants by the end of the year, with a total aggregated capacity of ~52 MWp, mainly located in Catalonia. At this scale, even small percentage improvements in detection and response can deliver significant economic returns: the combination of early detection, precise localization, and impact-based prioritization can become a true multiplier of operating margin.

Current context

With the expected growth, O&M must move from a model based on manual inspections and fixed schedules to a more granular, remote, ROI-oriented model that enables operations to be industrialized before complexity scales. Currently, monitoring is often at inverter level or across string groupings and, when deviations appear, on-site visits are required to confirm the cause and pinpoint the exact location of the issue (row/module). This can lead to late detection, accumulated production losses, and high logistics costs.

Typical issues impacting production and/or cost:

- Soiling and uneven dirt buildup (localized areas) requiring targeted cleaning.
- Hot spots, diodes, connectors, and electrical faults, detectable via thermography.
- Broken/delaminated modules, PID, mismatch, and abnormal degradation.
- Excess vegetation and localized shading.





ADVANCED O&M FOR PHOTOVOLTAIC PLANTS

What are we looking for?

To implement a predictive and scalable O&M model based on remote inspection (drones/robotics) and advanced analytics, with the aim of detecting anomalies early, prioritizing actions, and reducing travel and manual inspections—supported by robust false-positive management and the ability to demonstrate clear ROI per inspection/intervention (recovered production or avoided losses vs operating cost).

Proposals are expected to include:

Field data capture: inspections using drones (RGB and preferably IR thermography) and/or robotics (inspection and/or cleaning), with a repeatable and safe operating approach.

Automated processing: detection and classification of issues using computer vision/AI, with evidence (images) and precise georeferencing.

Prioritization and action recommendations: severity-based classification and impact estimation (kWh/€, €/day), with recommended interventions (cleaning, replacement, electrical checks, brush clearing, etc.).

Operational integration: actionable reports and dashboards, and export of results to feed work orders and ensure traceability (before/after and corrective-action verification).