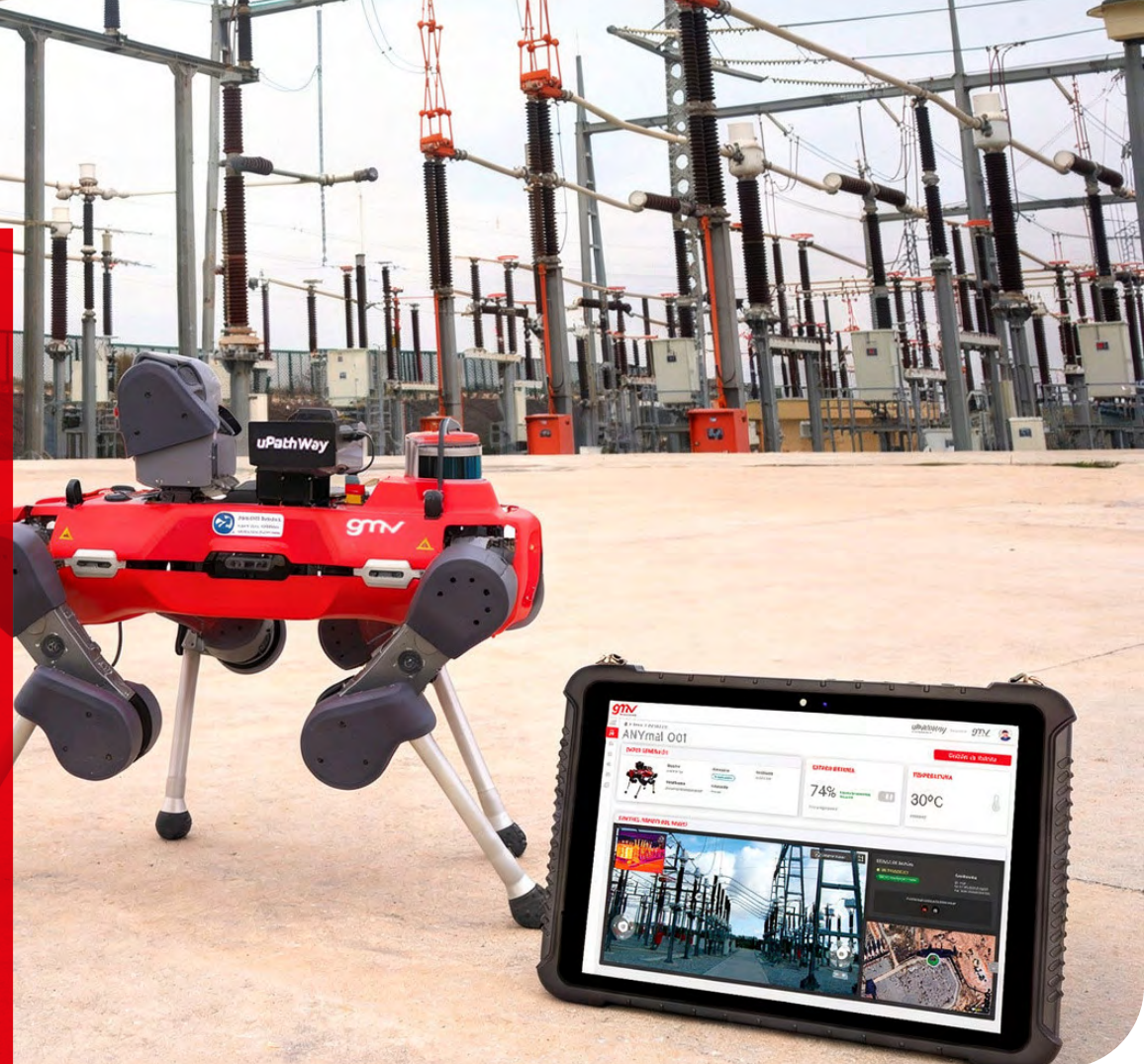


uPathWay®

INTELLIGENT ROBOTICS

Autonomous ground-based inspection for power and grid infrastructure

Detects thermal and visual anomalies earlier, reduces human exposure to high-voltage environments, and enables predictive maintenance of critical electrical assets.



Our solution integrates rugged autonomous ground robots equipped with advanced sensor payloads, fully orchestrated by our **uPathWay®** software. We provide an end-to-end service, from site mapping and system integration to continuous support, enabling safe, repeatable, and automated inspections of substations and critical grid infrastructure. This setup ensures early detection of anomalies, allowing operators to transition from reactive to predictive maintenance.

CUSTOMER CHALLENGE



Safety Risks in High-Voltage Zones: Exposing human personnel to hazardous environments for routine data collection is risky and limits the frequency of inspections.



Undetected Early-Stage Degradation: Intermittent manual rounds often miss early thermal anomalies (hotspots) or physical defects that lead to critical transformer or switchgear failures.



Siloed & Unstructured Data: Manual gauge readings and visual checks generate inconsistent data that is difficult to digitize and integrate into Enterprise Asset Management (EAM) systems for automated maintenance triggering.

Contact

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gmV®
INNOVATING SOLUTIONS

SOLUTION OVERVIEW – ROBOT, SENSORS AND uPathWay®

- **Robotic Platforms:** We integrate industry-leading quadruped wheeled ground robots capable of navigating complex substation terrains, stairs, and gravel.
- **Sensor Payloads:** High-resolution PTZ cameras (for gauge reading, switch state verification, and visual defects), radiometric thermal cameras (IR) for hotspot and temperature monitoring, also we can include other sensors under demand like acoustic sensors for detecting partial discharges or corona effects.
- **uPathWay® Orchestration:** Our proprietary command-and-control software acts as the central hub. It enables autonomous mission planning, fleet management, real-time telemetry, and AI-driven processing of sensor data.
- **End-to-End GMV Service:** We handle the entire lifecycle: 3D site scanning, route definition, EAM/SCADA integration, deployment, operator training, and SLA-backed after-sales support.



BUSINESS BENEFITS



Uncompromised Safety: Zero human exposure to high-voltage or hazardous areas during routine inspection missions.



Maximized Asset Uptime: Continuous thermal and acoustic monitoring allows for early anomaly detection, significantly reducing unplanned power outages and extending asset life.



100% Data Consistency: Automated, repeatable data collection feeds directly into predictive maintenance workflows, eliminating human error in gauge readings and condition reports.

WHY GMV

- **Successful deployment of autonomous robotic inspection** for electrical substations and other critical infrastructures, demonstrating robust operational efficiency and reliable automated anomaly detection.
- **System Agnosticism & Integration Expertise:** GMV is uniquely positioned to integrate hardware from multiple vendors into existing corporate IT/OT networks securely.
- **Certifications & Compliance:** Equipment options include IP67/IP68 weatherproofing and ATEX-certified robots for hazardous environments. GMV's processes operate under rigorous ISO 9001 (Quality), ISO 14001 (Environment), and ISO 27001 (Information Security) standards.

NEXT STEPS

Step 1



Site assessment and use-case definition: Review of site layout, inspection priorities and pilot objectives.

Step 2



Deployment and commissioning: Deployment of the robot and **uPathWay®** platform, validation and capability transfer for customer operators and maintenance personnel.

Step 3



Pilot operation and validation: Execution of autonomous inspection missions and validation of inspection workflows.

Step 4



Scale-up and multi-site deployment: Extension of inspection coverage and introduction of centralized multi-site fleet management.

Interested in autonomous Power & Grid inspection?

- Request a pilot assessment: alazaro@gmv.com

