Smarter technology for all

Lenovo



Robotic Inspection

Revolutionizing Industrial Patrol and Inspection with Lenovo Robotic Inspection Solution – Smarter, Safer, and More Efficient

Industrial operations demand precision, safety, and efficiency, especially in high-risk and complex environments. Lenovo's Robotic Inspection Solution is an enterprise-grade, AI-powered platform that transforms traditional patrol and inspection processes into intelligent, proactive workflows. By integrating advanced robotics, edge AI, and multi-modal sensing, the solution delivers continuous asset monitoring, anomaly detection, and actionable insights with minimal human intervention. At its core is Lenovo's **simulation-first digital twin approach**, enabling inspection routes, sensing workflows, and AI models to be trained in a virtual replica of the facility before deployment. This minimizes risks, reduces disruptions, and accelerates timelines. Once deployed, the system delivers real-time monitoring, AI insights, and automated workflows, improving safety, reliability, and efficiency. Lenovo's Robotic Inspection solution ensures quick deployment and reduced risks while boosting operational performance.

Lenovo Manufacturing Solutions

Use Cases — Utility

中国南方电网 CHINA SOUTHERN POWER GRID

国家电网 STATE GRID

Over 80% inspection efficiency improved
"FeiWin Robotic Dog", the Robotic Inspection solution jointly developed with Lenovo, has become a milestone achievement in the intelligent upgrade of substations. This product is the first in China to achieve 100% coverage of all inspection points within a substation using a single intelligent device. It has now been upgraded to an integrated "inspection and operation" version, improving daily inspection efficiency by over 80%. It provides a comprehensive, efficient, and safe intelligent management and control solution for power stations.
Technology Expert, China Southern Power Grid.

Main Advantages

- **Enhanced Inspection Efficiency:** Achieve up to 80% improvement in daily inspection efficiency through automated workflows and intelligent mobility.
- **Improved Workforce Safety:** Minimize exposure to hazardous environments with robotic automation, enabling safer working conditions and sustainable operations.
- **AI-Powered Multi-Modal Sensing:** Detect anomalies and process visual, thermal, and environmental data with advanced AI analytics to support timely and accurate decision-making.
- **Simulation-Driven Deployment:** Reduce commissioning time and operational risks with physics-based simulation and site-specific robot training for optimized workflows.
- **Seamless Integration:** Connect inspection outputs to enterprise IT and OT systems, transforming raw sensor data into actionable intelligence that supports predictive diagnostics and automated workflows.

Proven Business Outcome

Defect detection rate
>95%

Inspection time reduced by
90%

Return on investment in
1.36 years

Optimize O&M management processes and improve **equipment reliability** and **operational stability**.

Enhances safety and risk management, improve operational efficiency, reducing task completion time by
65%

70%
more efficient outcomes result from intelligent and remote monitoring

Use Cases:

- **Utilities & Energy Infrastructure:** Automates inspections of substations, transmission assets, and power stations, ensuring asset coverage, enhanced safety, and reliable performance of energy systems.
- **Oil & Gas Facilities:** Modernizes inspection of pipelines, platforms, storage tanks, and refineries with robotic automation to detect anomalies, maintain compliance, and reduce risks in hazardous environments.
- **Manufacturing & Industrial Facilities:** Optimizes inspection workflows to improve asset reliability, enhance efficiency, and minimize downtime in complex production environments.
- **Mining Operations:** Safely inspects open-pit and underground sites, monitoring equipment health, assessing infrastructure, and ensuring continuity in rugged, large-scale environments.
- **Airports & Transportation Infrastructure:** Monitors runways, rail corridors, bridges, tunnels, and restricted zones, improving structural integrity, safety compliance, and operational readiness.
- **Construction Sites:** Automates monitoring and inspections, enhancing visibility, safety compliance, and risk management in dynamic job sites.
- **Agriculture Operations:** Inspects agricultural assets, irrigation systems, and facilities to improve oversight, reduce labor, and increase productivity across large areas.
- **High-Risk Environments:** Deploys robots to hard-to-access or dangerous locations, reducing human exposure while maintaining safe and reliable operations.

Transforming Inspection Workflows with Smarter Automation

Lenovo's Robotic Inspection Solution modernizes inspection workflows across diverse industries by automating repetitive and high-risk tasks. The platform leverages advanced robotics and intelligent path planning to perform dependable inspections in dynamic, constrained, and unstructured environments. From routine patrols to emergency inspections, the system ensures comprehensive situational awareness, higher-quality data collection, and faster response times. By replacing manual, reactive processes with intelligent automation, organizations can achieve greater reliability, consistency, and operational sustainability.

AI-Driven Insights for Proactive Operations

Designed with cutting-edge AI capabilities, Lenovo's solution processes multi-modal sensor data in real time to detect anomalies and provide predictive diagnostics. The system supports automated decision-making and root-cause analysis while enabling guided or autonomous corrective actions. With fleet-level scalability and robust data security, the platform ensures continuous monitoring across distributed sites, empowering organizations to optimize operations and improve asset availability.



Leading features

Enterprise Robotic Inspection
Provides scalable, automated inspection workflows across complex industrial environments, improving inspection coverage, consistency, and reliability while reducing dependence on manual processes.

Workforce Safety and Operational Sustainability
Eliminate personnel exposure to hazardous, repetitive, and high-risk inspection activities, supporting safer working conditions and more sustainable operations.

Intelligent Mobility for Complex Environments
Utilizes advanced navigation, localization, and intelligent path planning to enable dependable, mission-critical inspections in dynamic, constrained, and unstructured environments.

AI-Enabled Multi-Modal Sensing and Analytics
Processes data from visual, thermal, and environmental sensors using flexible AI analytics to detect anomalies, support timely insights, and meet latency, reliability, and security requirements.

Simulation-Driven Deployment and Validation
Applies physics-based simulation and robot training to model facilities and inspection workflows, enabling site-specific optimization as well as faster and lower-risk deployment.

Integrated Inspection and Patrol Operations
Unifies routine patrols with detailed inspections to deliver comprehensive situational awareness, higher-quality data collection, and improved response efficiency.

Enterprise IT and OT System Integration
Integrates seamlessly with existing enterprise IT and OT systems, converting inspection data into actionable intelligence that supports data-driven decision-making and automated workflows.



Routine Inspections	Emergency Inspections	System Integration
Configurable tasks triggered by schedules, intervals, or rules.	Robots autonomously plan and execute tasks from 3D map inputs.	Responds to alarms by dispatching robots for on-site checks.

Robot Spec

	6-Legged Model		4 Leg-Wheeled Model	
Product Model				
	Bot IS 2.0	**Bot GS 3.0**	**Bot MC**	**Bot MX**
Dimension (mm)	980 × 484 × 480	1160 × 660 × 610	630 × 360 × 465	(860-1000) × 500 × 600
Weight (kg)	37	68	20	40
Max Payload (kg)	30	100	15	75
Step Height (cm)	20	22	16	22
Slope (deg)	45	45	30	45
Walking Speed (m/s)	2	1.6	3.7 (Customizable 5)	6
Battery Life (hr)	2.5-3	2.5-4	1-2	2-4
IP Rating	IP67	IP67	IP54	IP67
Positioning Comparison	Inspection, Patrol	Payload operations	Education, Inspection, Patrol	Inspection, Patrol
Primary Application	Extreme-terrain industrial-grade	Extreme-terrain	Entry-level lightweight	All-terrain industrial-grade
Customized Sensor Selection	☑ Advanced Dual light camera ☑ Robot protective clothing	☑ PD module ☑ Gas sensor	☑ Robotic arm ☑ Laser scanner	☑ Panoramic camera ☑ Acoustic camera

*** How to choose?**

6 legged robots extreme terrain, high-stability robot optimized for heavy payloads, complex tooling, and harsh environments where reliability and capability matter more than speed.
(Payload and stability are the key points)

4 legged wheeled robots are for High-speed, all-terrain inspection and patrol optimized for coverage, response time.
(Locomotion Performance and Efficiency are the key points)

Intelligent Inspection Categories

Cutting-Edge Algorithms

Delivers top performance in intelligent inspection algorithms, with a proven track record of success among industry clients.

Power equipment monitoring

Equipment Defects

- Silicone cartridge damage
- Oil seal damage
- Silicone discoloration
- Blurry dial surface

Equipment Status

- Pressure plate
- Indicator light
- Isolation switch
- Energy storage indicator

Meter reading

- SF6 pressure gauge
- Double-Pointer Surge Arrester Meter
- JCQ series surge arrester meter
- Pointer type oil level gauge

Dynamic instruction extension

- Template instructions
- Custom instructions

Unmatched Industrial Data Advantage

A robust database with over 500,000 entries in the power industry, enriched with expert annotations to establish a significant data advantage in the sector.

Environment and personnel monitoring

Operational Control

- Smoking
- Fallen
- Crowd
- Not wearing safety helmet

Environmental Safety

- Small animal intrusion
- Hanging suspended objects
- Fire and smoke
- Indoor water accumulation

Engineering Safety

- Drainage ditch blockage
- Floating oil on the water surface
- Curb damage
- Missing manhole cover

Few-shot and anomaly detection

Few-shot Detection
Detect the target based on the reference image

Anomaly Detection
Detect abnormal objects based on normal samples

Lenovo's global strength

180
Markets

10M+
Order lines per year

1B+
Global customers

120M+
Shipments

30+
Global manufacturing sites

2000+
Suppliers

>$160M
Digital transformation investment

18
R&D locations worldwide

69.5K
People



Lenovo ranks 5th in the Gartner® Supply Chain Top 25 for 2026 report



World Economic Forum's Global Lighthouse Network



TITAN Business Awards



BIG Awards for Business - Product of the Year



GOLD GLOBEE® AWARDS

Empowering Next Level Inspection: 24/7 Intelligence from Robot Dogs Beyond Human Capabilities

Contact us today to discover how Lenovo Manufacturing Solutions can bring the future of manufacturing to you.
Learn more on:
https://www.lenovo.com/manufacturing

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