



Patrol Inspection Solution
PUDUD5Series - AppliedScenrios



Contents

01

Market Size

02

Pain Points

03

Why choose D5?

04

Where to use?

05

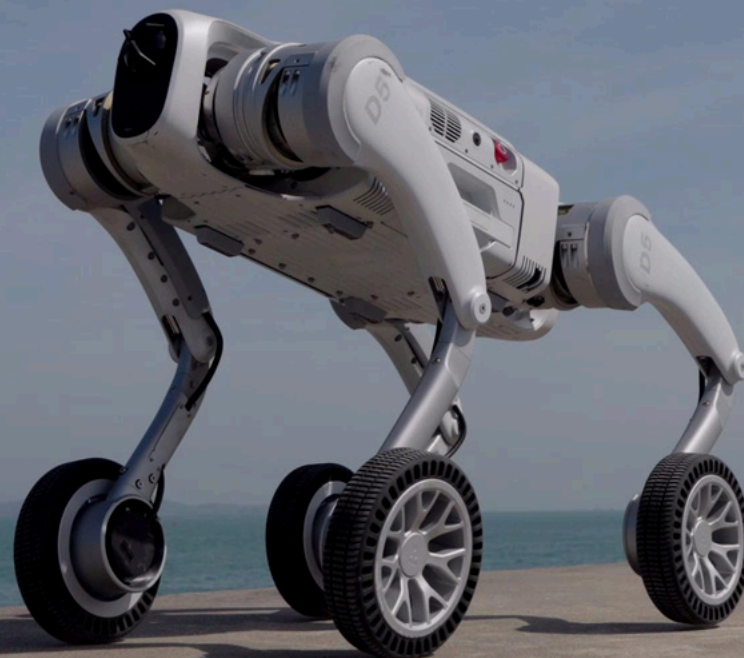
Roadmap

06

Our Goal



01 Market Size





Inspection Robot Market Size Outlook 2025 to 2035

The inspection robots market is valued at USD 3.2 billion in 2025 and is projected to reach USD 11.7 billion by 2035, growing at a CAGR of 13.9%.

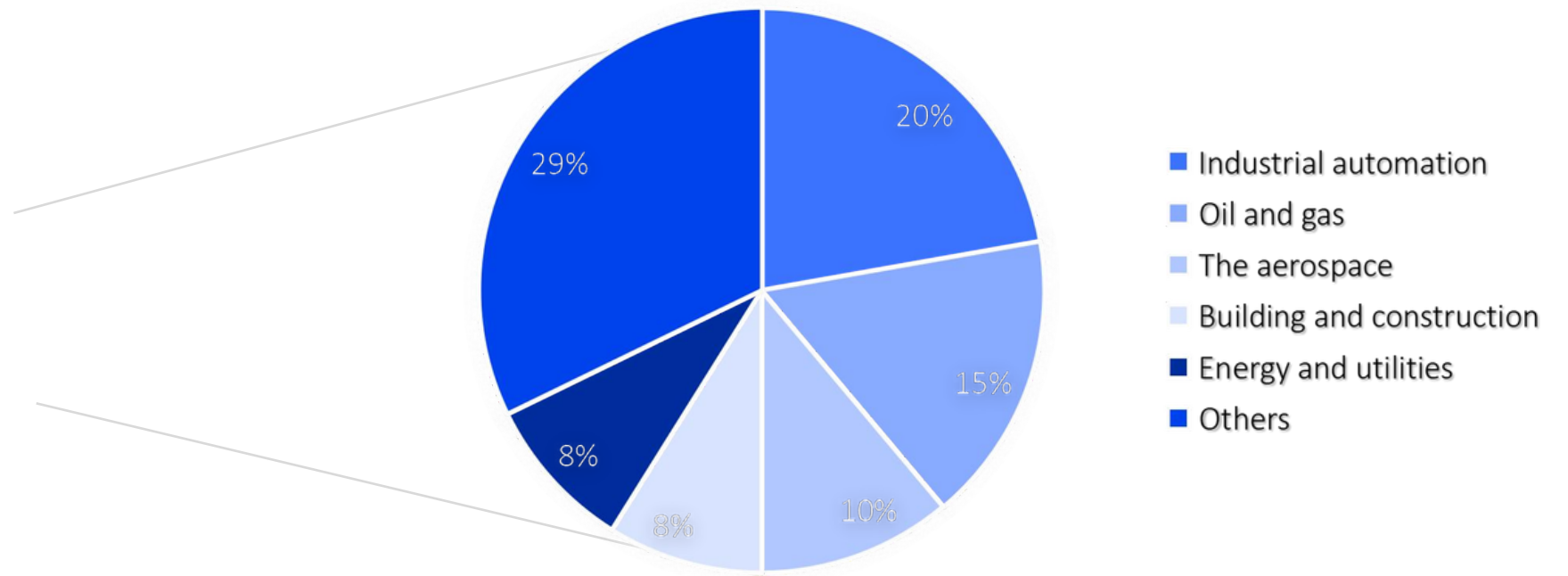
Company	Smiths Detection Group Ltd.	Rapiscan Systems
Contract/Development Details	Secured a contract with an international airport authority to implement advanced passenger security screening.	Partnered with a transit authority to install security scanning systems in subway and railway stations.
Date	7 Years	6 Years
Contract Value (USD)	18,000,000	21,000,000





Segmental Analysis

The inspection robots market is undergoing steady expansion, driven by the need for enhanced operational safety, efficiency, and precision across industrial sectors.





02

Pain Points





Five High

This early phase shows moderate acceleration as industries like manufacturing, oil and gas, and infrastructure adopt inspection robots for tasks such as pipeline monitoring, facility inspections, and asset management. The initial growth is steady, driven by increasing efficiency and safety benefits.

High Risk

In industries such as petrochemicals, nuclear power, there are environments that are flammable, explosive, highly radioactive, contain toxic gases, or are oxygen-deficient. It's Extremely dangerous or difficult for humans to access.

High Standard

Traditional manual inspection has significant uncontrollable issues. Did the inspector actually arrive at the scene? Did they miss key instruments? Did they fill in false data casually? These are difficult to completely eliminate through management.

High Strength

Many facilities are located in places where it is extremely difficult for humans to survive or maintain them. such as power transmission lines, long oil pipelines, and dark underground cable corridors. Sending people to inspect them may take half a day just for a one-way trip.

High Frequency

Many devices require 24-hour monitoring. Implementing a three-shift manual system not only necessitates 3-4 times the manpower reserve but also results in extremely low efficiency during night shifts and a high rate of misjudgment.

High Cost

Young people nowadays (those born in the 2000s and 2010s) are extremely reluctant to engage in inspection work that is boring, repetitive, socially isolated, and carried out in harsh environments. Enterprises are facing a serious structural talent gap.





03

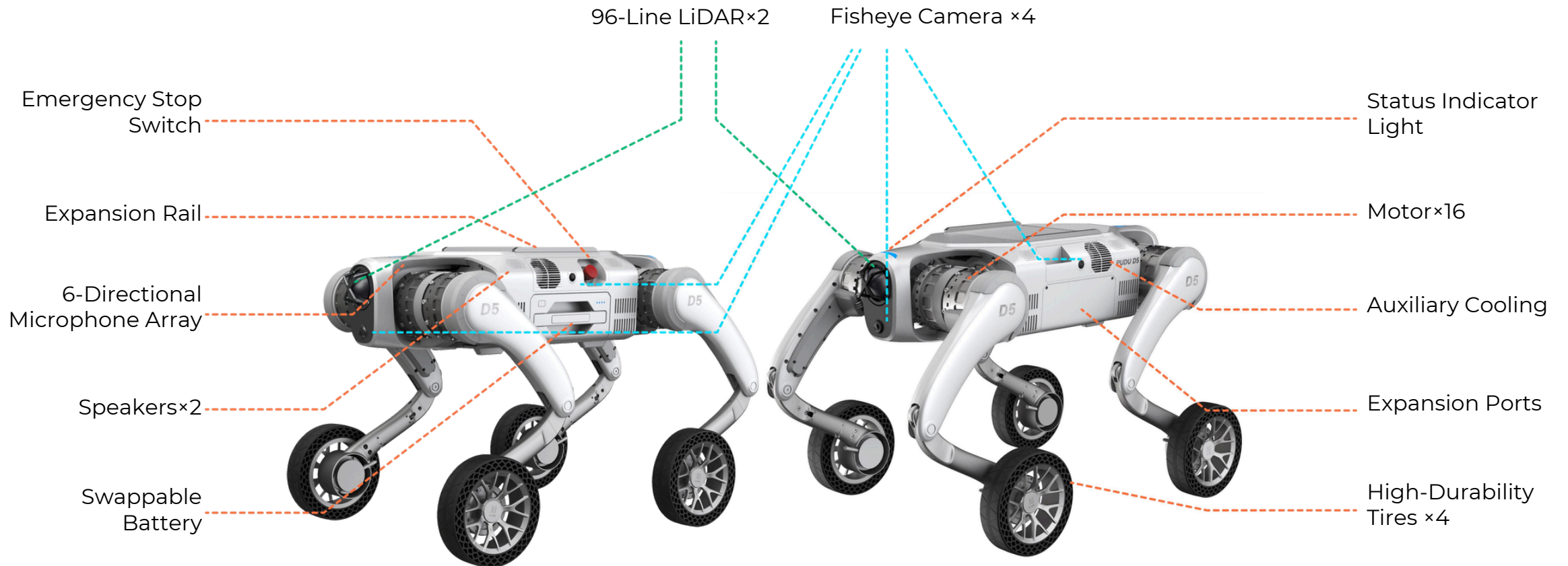
Why choose D5?





Product Appearance

Why choose D5?





Autonomous Navigation with 360° Perception

Powered by high-performance edge computing, D5 integrates LiDAR and visual perception for centimeter-level 3D mapping and dynamic obstacle avoidance, ensuring seamless operation in complex environments.

PUDU D5 Patrol Inspection Solution

All-Terrain Mobility for Complex Environments

High-torque motors combined with dynamic posture control algorithms enable D5 to confidently navigate obstacles, climb slopes, and traverse steps across diverse indoor and outdoor terrains.

All-Weather Durability and Extreme Resilience

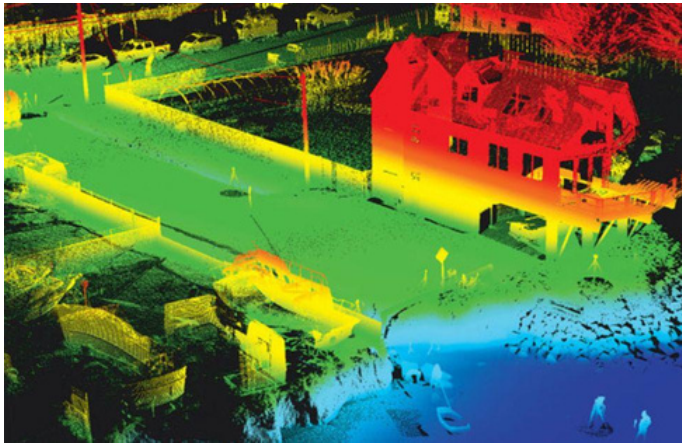
Cold-start capability at -10°C and stable operation across -20°C to 55°C temperature range. IP67-rated protection ensures reliable all-weather performance in rain, wind, and dust.

Natural Interaction with Gesture and Voice Control

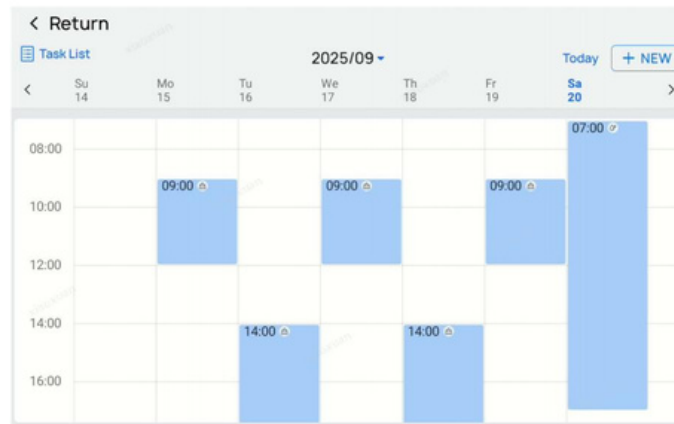
Multi-modal interaction via voice, gesture, and remote control. Precise human motion recognition and real-time autonomous following deliver an intelligent companion experience that truly "understands and follows you."



Scheduled autonomous tasks



3D Mapping
(outdoor & indoor)



Create timed schedule



Patrol inspection
(record data-review data-storage data)



A Modular Mobility Platform: One Base, Infinite Applications

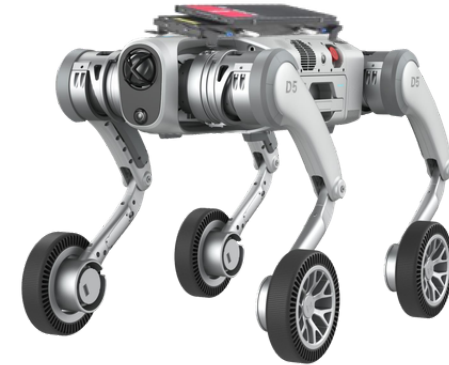
In inspection scenarios such as power, manufacturing, chemical, and industrial parks, equipment anomalies usually manifest **as temperature rise, gas leaks, abnormal sounds, meter deviations**, etc., scattered across different devices and areas.



Delivery accessory



Thermal Imaging,
Optical Gimbal

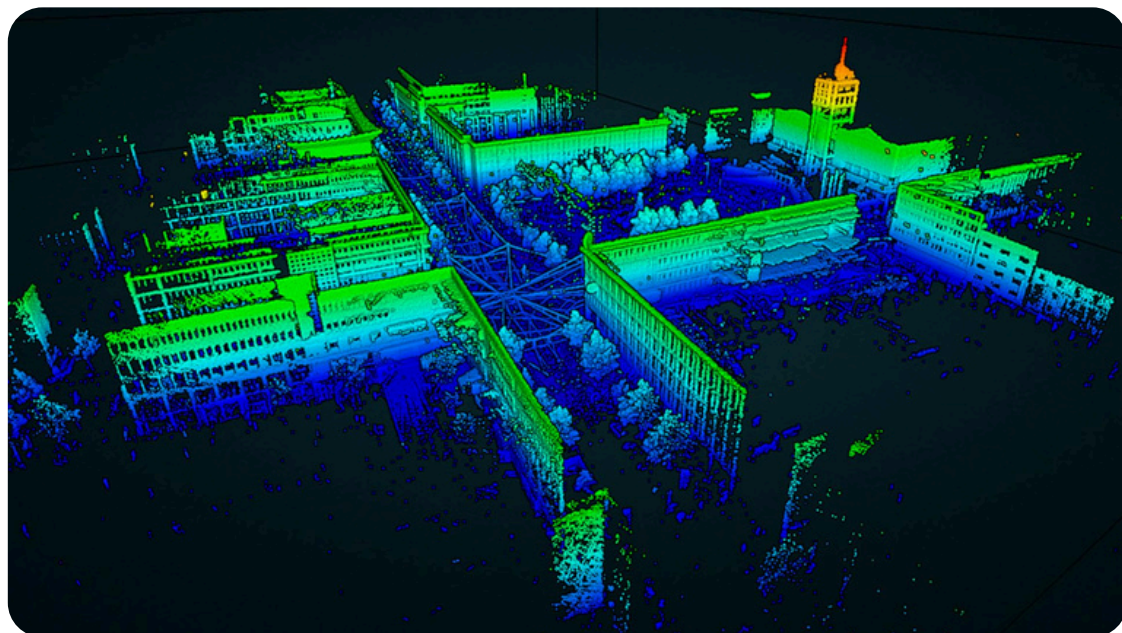


Gas detection

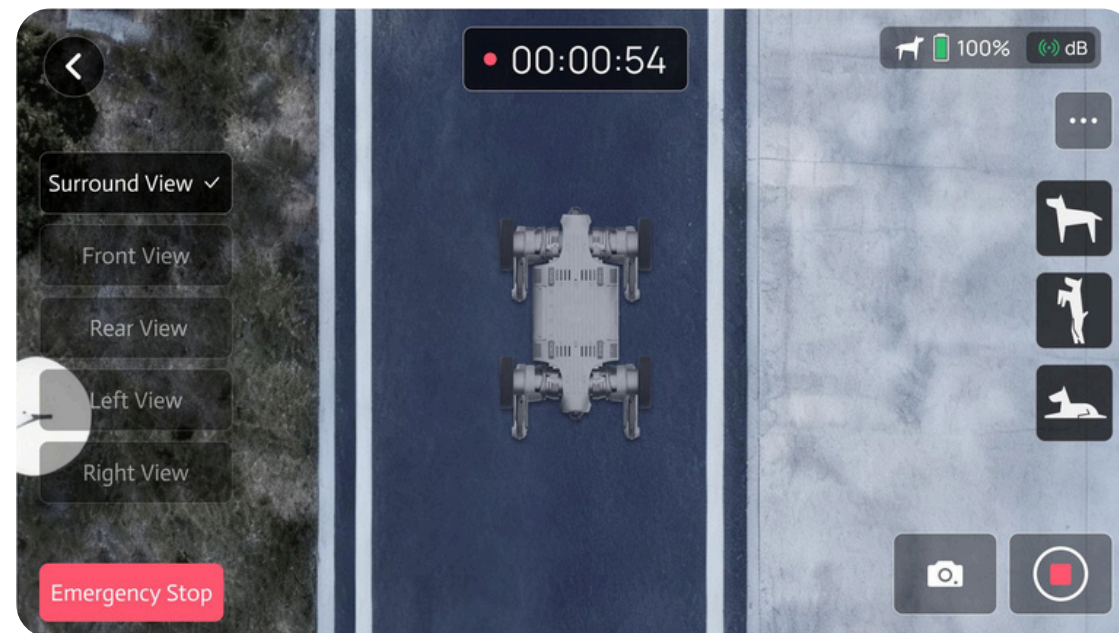


Auto Navigation 2 * 3D Lidar + Slam

In factories, power stations, and large industrial parks, there are generally slopes, stairs, narrow passages, hollowed-out structures, cross-floor areas, and long-distance inspection routes, and it is necessary to coexist with personnel and AGVs.



Dual-lidar combined with visual SLAM to construct 3D high-precision maps, improving positioning stability

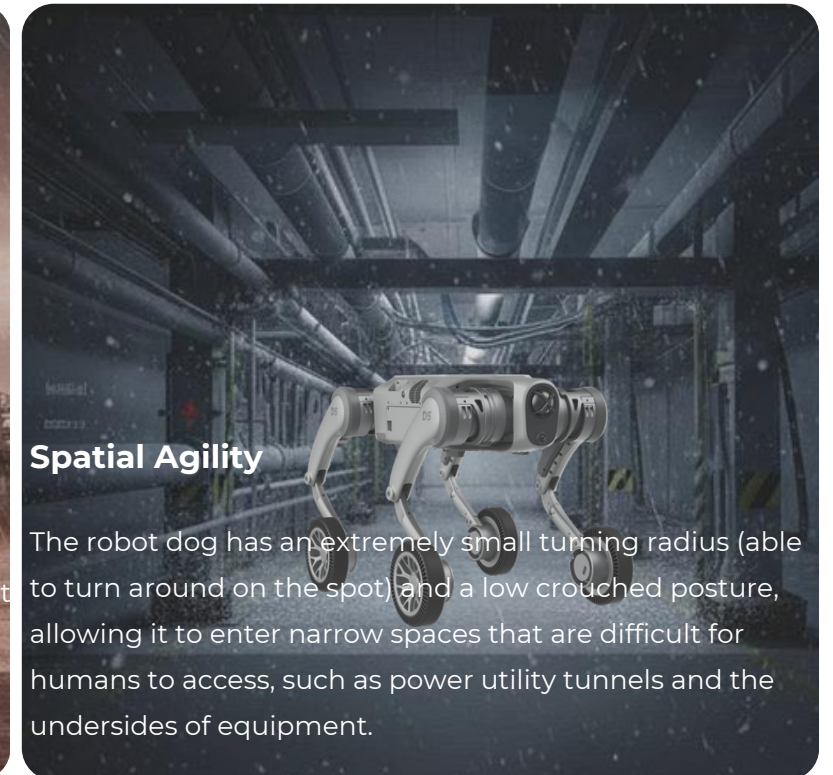
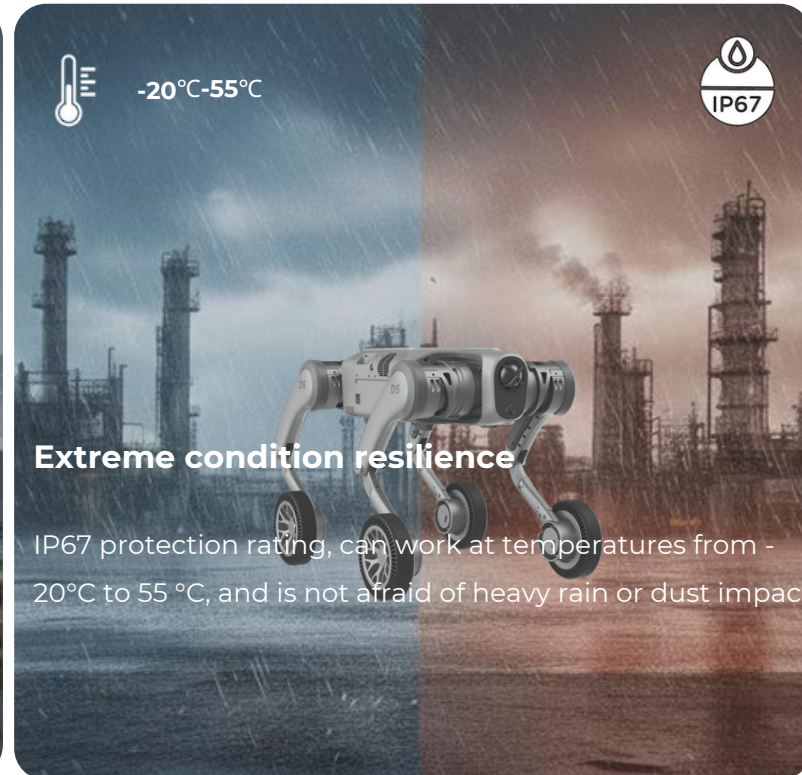


RCOS Remote Control System: Monitor real-time operating status and issue commands instantly. Live panoramic views from cameras give you full visibility of the on-site environment.



Universal Access for Non-Standard Environments

Industrial and park inspections usually alternate between indoor and outdoor environments, with long-term exposure to dust, rainwater, cleaning water columns, as well as temperature differences between day and night and between seasons.





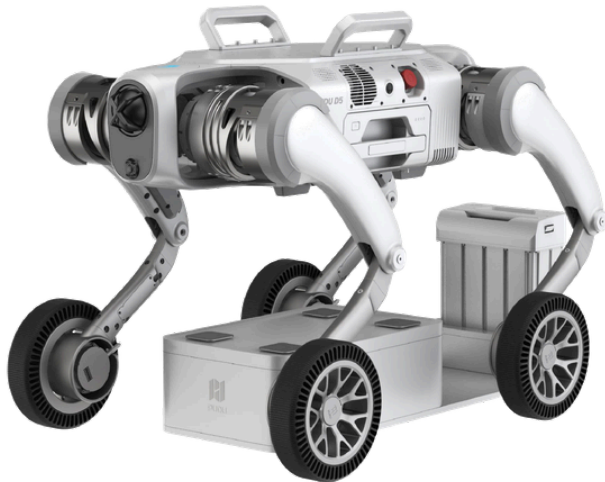
After Patrol inspection
Why choose D5?



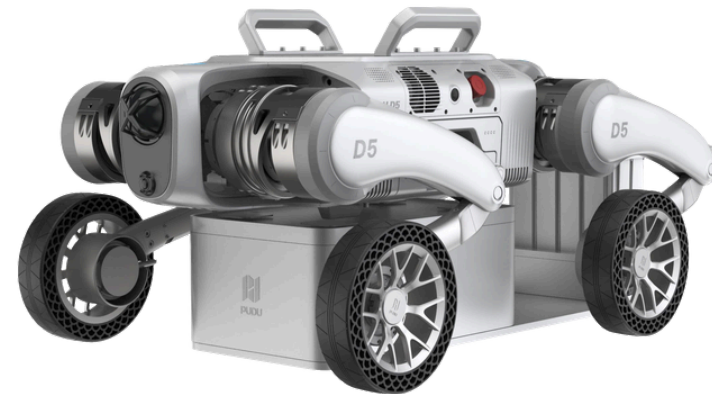
Unattended operation

Inspection tasks usually need to run continuously during unattended periods such as nights and holidays, which puts forward higher requirements for the battery life and energy replenishment methods of the equipment.

Breakpoint Resume



Auto-charging





Inspection Platform

In actual inspections, enterprises not only pay attention to whether the inspections are completed, but also focus on task scheduling, process visualization, result traceability, and the value of data in operation and maintenance decision-making.





Traditional Inspection Equipment Comparison

Why choose D5?



Comparison

Equipment	 Robot Dog	 Inspection robot	 Drone	 Fixed Camera
Protection Capability	✓	✓	✗	✓
Endurance	✓	✓	✗	✓
Outdoor Passability	✓	⚠	⚠	✗
Indoor Passability	✓	⚠	✗	✗
Expansion Capability	✓	⚠	⚠	✓



04

Where to use





Power Plant & Factory & Farm



Power Generation



Transmission



Substation



Logistics Warehouse



Production



Energy Storage



Distribution



Power Consumption



Canning



Steel



The D5 Robot dogs are going to Inspect for...



Overheating

Motors, Bearings, Compressors,
Boilers/Heat Exchangers



Electrical Anomalies

Distribution Cabinets,
Transformers, Busbars,
Switchgear



Gas Leaks

Pipelines, Valves, Storage Tanks



Pressure Anomalies

Hydraulic/Pneumatic Systems,
Storage Tanks



The D5 Robot dogs are going to Inspect for...



Abnormal Noise

Motors, Bearings, Machine Tools,
Compressors



Fire Hazards

High-temperature Process
Sections, Storage Channels



Environmental Exceedance

Production Lines, Storage Areas



Security Events

Parks, Garages, Building
Corridors

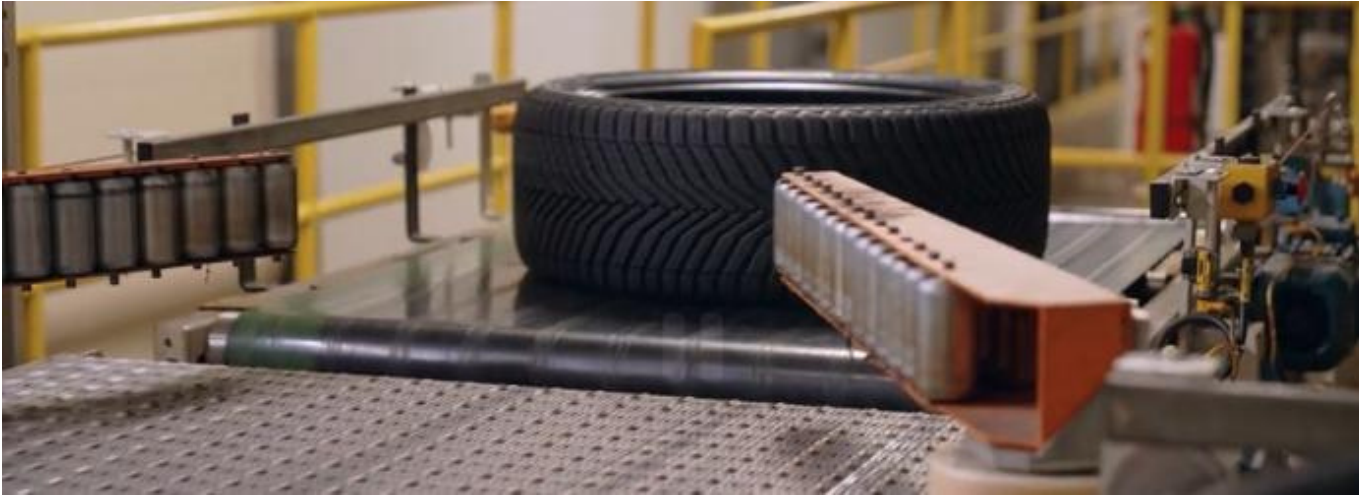


In **large, complex power plants** with high temperature and hazardous gas risks, Spot robots perform automatic inspections, **thermal imaging, gas detection, and meter reading**, enabling all-weather hazard detection and data collection, helping companies **improve safety, reduce labor costs, and support predictive maintenance and compliance management**.



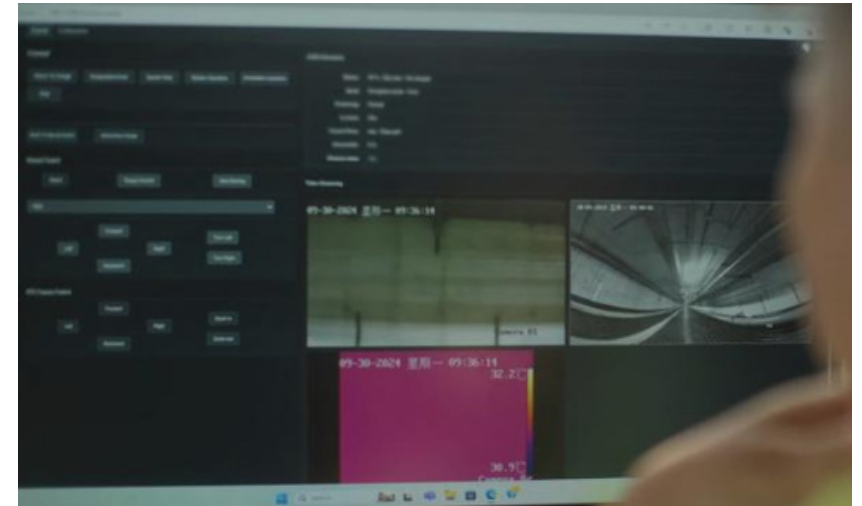
Japan J-POWER:

uses Spot robots for fixed-point inspections in **geothermal plants**, automating **meter reading, temperature, gas, acoustic, and oil leak detection** across 188 points. Data is uploaded to the cloud, improving safety, reducing manual workload, enabling early fault warnings, and supporting intelligent O&M and digital transformation.



Michelin Factory:

uses Spot robots to inspect **tire production equipment**, performing **thermal, acoustic, oil/gas detection, and meter reading across 350 points**. Data is uploaded in real time to the Orbit platform for trend analysis and alerts, enabling early fault detection, reducing manual inspections, and improving equipment reliability and production efficiency.



Singapore Power Tunnel:

Mainly achieves **autonomous navigation, video and thermal imaging inspection**, anomaly detection (such as water seepage, cracks, temperature anomalies), etc. Robots replace manual inspection in long-distance, confined spaces, greatly saving manpower and time (up to 480 hours saved annually), and improving safety and inspection quality.



05 Roadmap





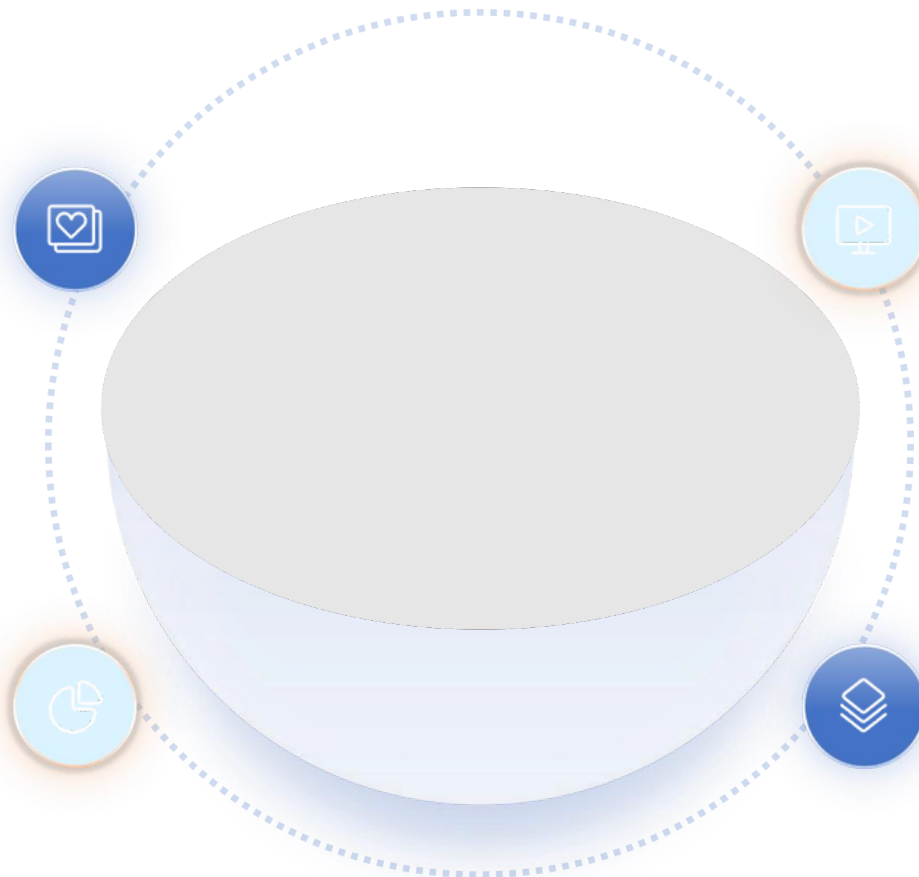
What do you gonna have for Patrol Inspection Solution?

Inspection accessories

- Dual-spectrum (optical, infrared) gimbal
 - Acoustic imager
- Device protective cover

Secondary development SDK

- Supports integration of third-party recognition models and sending recognition results
- Supports API calls for inspection device recording functions
- Supports API calls for official recognition models
- Supports secondary development integration of third-party devices



Inspection platform

- Supports creation, editing, and publishing of inspection routes and plans
- Supports capturing and recording images and acoustic information at destinations during inspection
- Supports on-device anomaly detection and reporting
- Supports viewing inspection records for each point on PC, including images and sound waves
- Supports pushing anomalies to the inspection task platform

Key capabilities

- Supports 3D mapping
- Supports 3D map autonomous navigation and stair climbing
- Supports automatic recharging
- Supports on-device anomaly detection and value reading

