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EQUITY RESEARCH

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Gecko Robotics

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Gecko Robotics

Visit Website

AI and robotics company providing advanced inspection and maintenance solutions for critical infrastructure

#robotics #defense

VALUATION

$1,250,000,000

2025

FUNDING

$347,430,000

2025

Details

HEADQUARTERS

Pittsburgh, PA

CEO

Jake Loosararian

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Valuation

Gecko Robotics reached unicorn status with a $125 million Series D round in June 2025, bringing total funding to $347 million. The round was led by Cox Enterprises, with participation from existing investors including US Innovative Technology Fund, XN, Founders Fund, and Y Combinator.

Previous funding milestones include a $173 million Series C completed across multiple tranches, with a $100 million extension in December 2023. The company's investor base spans strategic corporate investors like Cox Enterprises, government-focused funds like USIT, and prominent venture firms including Founders Fund and Drive Capital. Notable individual investors include Joe Lonsdale and Mark Cuban.

Product

Gecko Robotics is a robotics and AI platform that prevents catastrophic failures in critical infrastructure through automated inspection and predictive analytics. The company combines wall-crawling robots with cloud-based software to create comprehensive digital twins of industrial assets.

The hardware consists of the TOKA robot family, which uses magnetic wheels to crawl across steel surfaces like tank walls, boiler tubes, ship hulls, and pipeline exteriors. These robots carry multiple sensors including phased-array ultrasound, acoustic sensors, eddy-current detectors, HD cameras, and LiDAR. A water jet system acts as an ultrasound couplant, allowing continuous scanning at millions of data points per hour compared to the roughly 1% coverage achieved by traditional rope-access inspections.

Different robot variants handle specific environments. TOKA 3 and 4 models work on large tank surfaces, while TOKA 4 GZ operates in high-temperature hazardous zones. The newer TOKA Flex features an articulating chassis for 4-inch diameter piping, and the smaller MONARCH robot navigates confined vessel spaces.

All sensor data streams in real-time through Fulcrum pipeline software to Cantilever, Gecko's cloud-based operating platform. Cantilever processes the raw inspection data using AI models to quantify corrosion rates, predict remaining asset life, and generate color-coded risk maps. Plant managers can access scenario modeling tools to optimize repair schedules and capital expenditure planning. For naval applications, the platform can generate ship availability plans in minutes rather than the months typically required for manual analysis.

The typical workflow involves Gecko field teams arriving with 1-2 operators and multiple robots. While operators monitor progress on tablets, robots autonomously crawl and scan surfaces. Within hours, Cantilever renders 3D thickness maps with AI-flagged problem areas, enabling immediate maintenance decisions.

Business Model

Gecko operates a vertically integrated robotics-as-a-service model that combines proprietary hardware, AI software, and field services into comprehensive inspection solutions. The company controls the entire value chain from robot manufacturing to data analysis, allowing for tighter quality control and higher margins compared to companies that rely on third-party hardware or software components.

The go-to-market approach is primarily B2B, targeting large industrial operators, utilities, and government agencies that manage critical infrastructure. Gecko typically sells multi-year service contracts that include regular robotic inspections, ongoing access to the Cantilever platform, and engineering consulting services.

Revenue comes from three main streams. Inspection services generate fees based on the scope and frequency of robotic deployments, with pricing tied to asset coverage rather than hourly rates. Software subscriptions provide recurring revenue through Cantilever platform access, data storage, and AI analytics. Engineering services add higher-margin consulting work including repair design, digital twin development, and regulatory compliance support.

The model benefits from strong unit economics as robots can be deployed across multiple customer sites, spreading hardware costs over a large revenue base. Each robot can generate hundreds of thousands of dollars in annual revenue while requiring minimal ongoing maintenance. The software platform creates additional leverage, as the same AI models and analytics capabilities serve customers across different industries with minimal incremental development costs.

Customer acquisition focuses on demonstrating immediate ROI through pilot programs that identify previously unknown asset defects. Once deployed, the platform creates switching costs through accumulated historical data and integrated maintenance workflows. The combination of hardware, software, and services makes it difficult for customers to replicate the solution internally or switch to point solutions.

Competition

Vertically integrated players

Gecko faces competition from other companies building end-to-end robotic inspection solutions. ANYbotics offers the ANYmal quadruped robot with integrated inspection software, securing multi-year contracts with major oil companies like Petrobras and bp. Boston Dynamics provides the Spot robot with specialized sensor packages and partnered analytics through companies like Levatas. While Boston Dynamics has broader global distribution, their hardware costs roughly twice as much as Gecko's wall-crawlers and lacks the specialized climbing capabilities needed for vertical steel surfaces.

Invert Robotics operates magnetic climbing robots with ultrasonic and eddy-current sensors, using a robot-as-a-service model similar to Gecko's approach. They've established strong positions in food and beverage tank inspections and are expanding into chemicals and renewables. The competitive dynamic centers on sensor capabilities, climbing performance, and the depth of AI analytics platforms.

Service-oriented regional players

Local and regional competitors focus on specific geographic markets or asset types. International Climbing Machines builds small-batch climbing robots and wins state-level bridge inspection contracts through customized sensor payloads. Aetos Group integrates commercial drones with proprietary crawling robots, competing primarily on rapid deployment and lower daily rates for shorter-term projects.

Deep Ocean and TechnipFMC's robotics divisions concentrate on subsea assets but overlap with Gecko in offshore wind monopile inspections. These players typically have strong relationships with local maintenance contractors and regulatory bodies, making geographic expansion challenging for platform companies.

Enterprise software incumbents

Traditional industrial software companies are adding robotic capabilities to their existing platforms. Siemens Energy InspectionWorks, GE Vernova's inspection tools, and Honeywell Forge leverage installed bases of turbines and boilers to upsell robotic inspection services. These incumbents benefit from existing customer relationships and integrated maintenance management systems.

The competitive threat comes from their ability to bundle robotic inspections with broader asset management platforms, potentially commoditizing the inspection service while capturing value through software integration. However, their reliance on third-party robotics hardware limits their ability to optimize the full inspection workflow.

The defense sector offers substantial growth potential as Gecko scales beyond Navy shipyards into Air Force facilities and Army depots. DoD depot maintenance spending alone exceeds $130 billion over the next five years, with aging infrastructure creating urgent needs for automated inspection capabilities.

Heavy manufacturing and metals processing represent a massive expansion opportunity. The U.S. Steel pilot and Siemens Energy deployments open access to a global market of 50,000 industrial plants where unplanned downtime costs approximately $50 billion annually. Steel mills, chemical plants, and power generation facilities all operate similar high-temperature, high-pressure assets that benefit from Gecko's inspection capabilities.

Upstream oil and gas markets provide geographic and sector diversification. The ADNOC partnership validates Middle East expansion potential, where corrosion-related failures cost over $10 billion annually across the region's extensive refining and petrochemical infrastructure.

Geographic expansion

International expansion leverages Gecko's proven technology platform across different regulatory environments. The Middle East partnership with ADNOC creates a beachhead in GCC countries where new refinery capacity and extreme operating conditions exceed U.S. market scale.

European markets offer growth through tightening safety regulations and energy transition retrofits. SEVESO III safety requirements push facility owners toward more comprehensive inspection regimes, while aging power stations and industrial facilities require extensive monitoring during decarbonization efforts.

Asia-Pacific represents the next major frontier, with Japanese boiler manufacturers and Korean shipyards expressing interest in digitizing quality assurance processes. The region's massive manufacturing base and infrastructure investment create substantial long-term opportunities for robotic inspection platforms.

TAM Expansion

New products and deeper integration

Gecko is expanding Cantilever from inspection analytics into a comprehensive asset operating system. The platform will layer AI-generated repair plans, procurement integration, and generative design suggestions on top of existing inspection capabilities. This evolution positions Gecko to capture more value from each customer relationship by moving beyond data collection into actionable maintenance execution.

Real-time quality assurance for new construction represents another major expansion vector. The Navy contract demonstrates Gecko's ability to move upstream from maintenance into manufacturing QA for submarine and surface ship construction. This capability can be replicated across commercial shipyards, aerospace final assembly lines, and small modular reactor manufacturing, where quality defects are exponentially more expensive to fix after completion.

Multi-modal robot development will extend Gecko's reach beyond wall-crawling applications. Planned underwater and aerial units will enable inspection of submerged pipelines, transmission towers, and wind turbine blades, accessing adjacent inspection budgets exceeding $4 billion annually across global infrastructure.

Customer base expansion

Risks

Hardware dependence: Gecko's business model relies heavily on proprietary robotic hardware that requires significant ongoing R&D investment and manufacturing capabilities. Unlike pure software companies, Gecko must continuously develop new robot variants for different applications while maintaining existing hardware fleets. Any major technical failures or inability to keep pace with sensor technology advances could undermine the company's competitive position and require substantial capital investment to address.

Skilled labor shortage: The company's field operations depend on trained technicians who can deploy and operate sophisticated robotic systems in industrial environments. As Gecko scales globally, finding and training qualified personnel in different markets becomes increasingly challenging. Labor shortages or high turnover in technical roles could constrain growth and impact service quality, particularly in specialized environments like naval shipyards or chemical plants.

Regulatory capture: Many of Gecko's target markets, particularly defense and critical infrastructure, involve extensive regulatory oversight and security clearance requirements. Changes in government procurement policies, security regulations, or international trade restrictions could limit market access or require significant compliance investments. The company's growing defense revenue, while attractive, also creates concentration risk around government budget cycles and national security priorities.

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