JEZETEK | VAKÓ
ADVANCED RAIL TECHNOLOGIES

TRACK & ROLLING STOCK MAINTENANCE SERIES

Jiutian Embodied Intelligence



Data-Driven Maintenance , Smarter And Human-Safe

ABOUT US

Company Profile

Sichuan Jiutian Embodied Intelligence Technology Co., Ltd. is an innovator in intelligent rail maintenance. We harness the power of big data and embodied AI to engineer safe, high-performance automated solutions tailored for the rail transit sector.

In infrastructure maintenance, our autonomous bolting robots deliver precision rail inspections and fastening (tightening/loosening), significantly bolstering line safety. In rolling stock maintenance, our intelligent insulator cleaning robots utilize advanced vision guidance and collaborative robotic arms to perform high-efficiency, unmanned cleaning—effectively eliminating the hazards inherent in high-altitude maintenance tasks.

As a leader in intelligent rail operations, we integrate sophisticated software engineering with our proprietary "Inspect-and-Act" technology. By transitioning maintenance workflows from manual tasks to predictive, AI-driven automation, we are building a smarter, safer, and more precise future for global rail infrastructure.

Industry Honors

Our commitment to excellence in AI integration has earned us widespread recognition and prestigious industry accolades:

- National High-Tech Enterprise Certification
- National "Little Giant" Enterprise (recognized for excellence in specialization and innovation)
- First Prize of the Wu Wenjun AI Science and Technology Award
- Ranked among the "Top 50 Chinese AI Agent Leaders of 2026"

Intellectual Property

Driven by innovation, we have solidified our technical leadership in embodied AI perception and control through rigorous R&D and advanced algorithmic optimization:

- An extensive portfolio of over 534 independent intellectual property rights.
- Deep patent coverage across machine vision, motion control, intelligent sensing, and AI algorithms.

Industry Qualifications

We uphold rigorous international quality standards through a robust management system, ensuring the reliability and safety of every solution we provide:

- ISO Quality Management System Certification
- CMMI (Capability Maturity Model Integration) Certification
- ITSS (Information Technology Service Standards) Certification
- CCRC Information Security Service Certification
- EU CE Safety Certification

AI Innovation Platform

Leveraging state-of-the-art research platforms to accelerate technological adoption, we are proud to be designated as a 2025 MIIT Manufacturing Transformation Promotion Center:

In strategic partnership with Huazhong University of Science and Technology, we are establishing Southwest China's first comprehensive Innovation Center for Embodied AI, creating an end-to-end ecosystem encompassing data acquisition, pilot verification, testing, and formal certification.



Jiuzhou Gongmei

Rail Bolt Robot: 2nd-Gen Impact Type

Intelligent and automated solutions for railway infrastructure maintenance.

The Jiuzhou Gongmei 2nd-Gen Impact Bolt Robot is engineered for the precision inspection and fastening/loosening of rail bolts. Featuring an integrated intelligent control system and a modular electric impact wrench, this robot excels in bolt identification and automated fastening. Guided by the principles of "Smart Maintenance, Proven Safety," the system operates autonomously in all weather conditions. It optimizes maintenance efficiency and accuracy while eliminating the risks associated with manual inspection in harsh environments, facilitating a transition toward a more reliable, precise, and modernized railway maintenance ecosystem.

Weight(without battery): ≤45kg

Length*Width*Height: 560×410×490mm

Max moving speed: 5Km/h

Moving Method: Automatically moves on single-track

Battery Capacity: 36V48Ah

Battery Efficiency: ≥1000 sets (Tighten or Loosen)

Max Loosening Torque: ≥850N.m

Tightening Torque: 80~350N.m（Adjustable）

Torque Precision: /

Max No-load rotation speed: ≥1200rpm

Power Supply: Lithium Battery, removable (approx.10kg)

Working efficiency: 5-7s/set（Automatic）

Control: Touchscreen + Remote Controller

Insulation Resistance: ≥90MΩ

Working Temperature: -20°C~40°C

No. of Sockets: 2

Working Method: Single-side independent operation, both sides synchronized

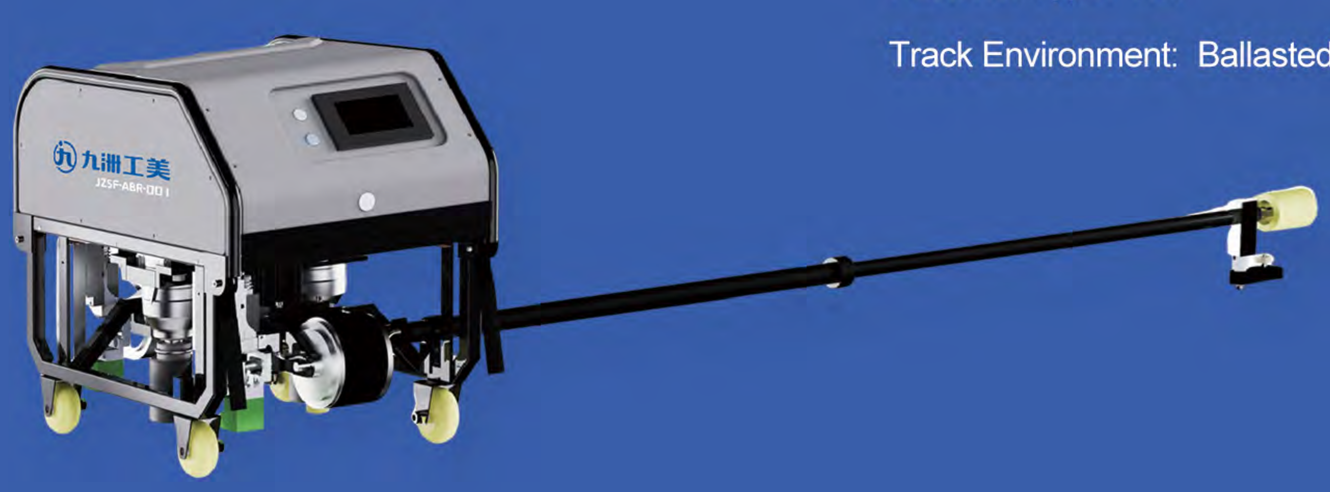
Obstacle Avoidance: /

Track Type: 50/60/75

Socket Center Distance: 214/234±0.5mm（Customizable，Min≈184mm）

Fastener Type: Nut

Track Environment: Ballasted / Ballastless



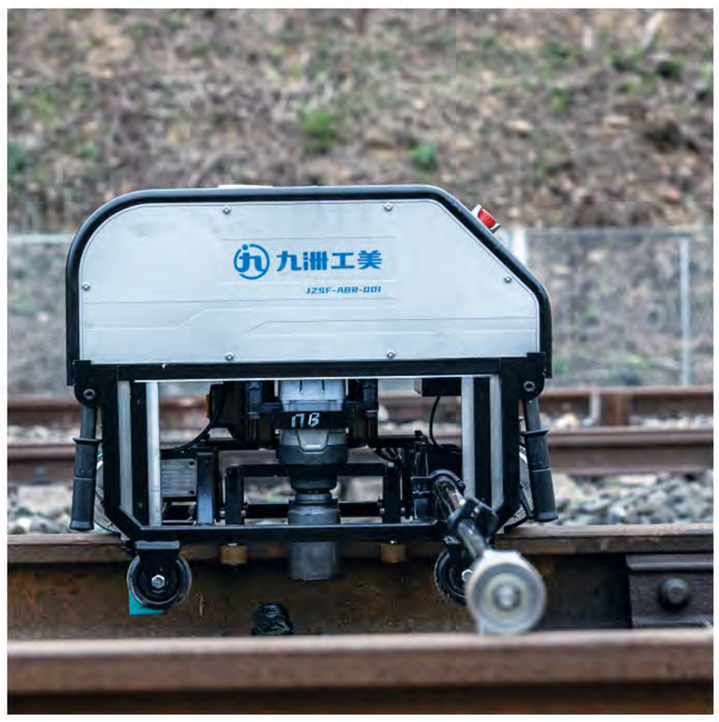
Product Advantages

- **Intelligent Vision System:** Supports high-precision bolt positioning.
- **Modular Impact Wrench:** Enables fully automated fastening with comprehensive data logging.
- **All-Terrain Resilience:** Built for all-weather deployment, significantly enhancing operational safety and throughput.

Application

Ideal for daily track patrol, bolt tightening/loosening maintenance, and nighttime "window" operations. This system is a vital tool for digitalizing railway infrastructure management and ensuring operational safety.









Jiuzhou Gongmei

Rail Bolt Robot: Static Torque Type

Intelligent and automated solutions for railway infrastructure maintenance.

Designed for high-speed rail, the Jiuzhou Gongmei Static Torque Rail Bolt Robot provides precision inspection and torque-controlled fastening/-loosening. It features a modular, servo-controlled electric torque actuator combined with high-accuracy positioning modules. With core capabilities such as precise torque regulation, automated fastening, and multi-robot collaborative control, this system is a benchmark in "Intelligent Maintenance." Utilizing advanced torque algorithms and multi-layered positioning, the robot is equipped with LiDAR-based collision avoidance to ensure maximum safety. Engineered for extreme versatility, it operates flawlessly from -20°C to 40°C in diverse environments including tunnels and night-time operations.



Product Advantages

- **Adaptive Torque Control:** Proprietary algorithms ensure precise, programmable torque application.
- **Full Servo-Electric System:** Highly adaptable to varied operational requirements.
- **Multi-Robot Collaboration:** Advanced positioning algorithms support synchronized fleet operations.
- **LiDAR Safety Shield:** Ensures the safety of trackside personnel and hardware.
- **Data Integrity:** Real-time collection and export of torque data for maintenance auditing.



Weight(without battery): ≤55kg

Length*Width*Height: 510×430×450mm

Max moving speed: 5Km/h

Moving Method: Automatically moves on single-track

Power Supply: Lithium Battery, removable (approx.10kg)

Battery Capacity: 48v21Ah/36V48Ah

Battery Efficiency: ≥1000 sets (Tighten or Loosen)

Max Loosening Torque: ≥480N.m

Tightening Torque: 80~350N.m（Adjustable）

Torque Precision: ±5%FS

Max No-load rotation speed: ≥110rpm

Working efficiency: 5-7s/set（Automatic）

Control: Touchscreen + Remote Controller

Insulation Resistance: ≥90MΩ

Working Temperature: -20°C~40°C

No. of sockets: 2

Working Method: Single-side independent operation; Both sides synchronized

Obstacle Avoidance: LiDar

Track Type: 60

Socket Center Distance: 214/234±0.5mm（Customizable，Min≈190mm）

Fastener Type: Bolt

Track Environment: Ballastless

Application Scenarios





Jiuzhou

Insulator Cleaning Robot

A specialized, automated solution for the unmanned, high-efficiency cleaning of locomotive insulators.

Powered by an ROS-based intelligent task scheduling system, the Jiuzhou Insulator Cleaning Robot features a modular architecture with high-precision robotic arms, vision units, and low-consumption cleaning technology. The system offers fully autonomous track navigation, adaptive model recognition, path planning, and water-efficient cleaning. By replacing high-risk manual cleaning with an "Unmanned, Precision-Driven" approach, this robot eliminates the challenges of unstable quality and prolonged downtime, delivering a reliable, end-to-end cleaning solution for rolling stock insulators.



Parameters

Model Compatibility: Supports 3+ mainstream locomotive/EMU models; customization available.

Positioning Accuracy: Track repeatability ≤ ±5mm; End-effector accuracy ≤ ±2mm.

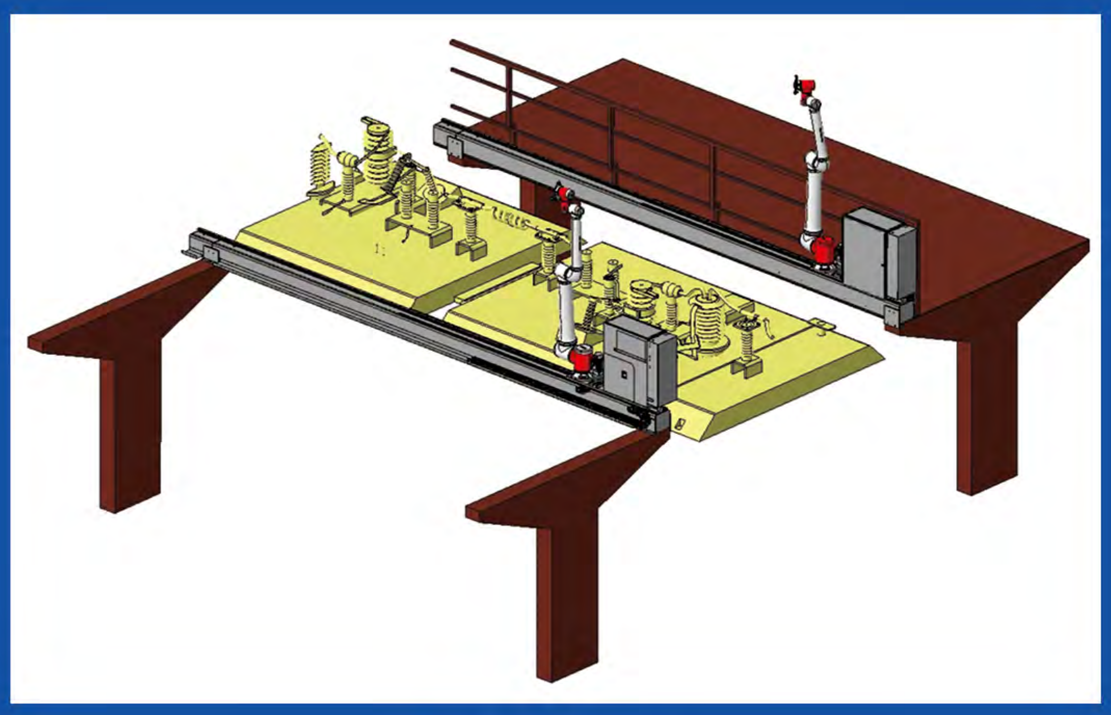
Cleaning Efficiency: ≤30 seconds per insulator.

Water Consumption: ≤50ml per insulator.

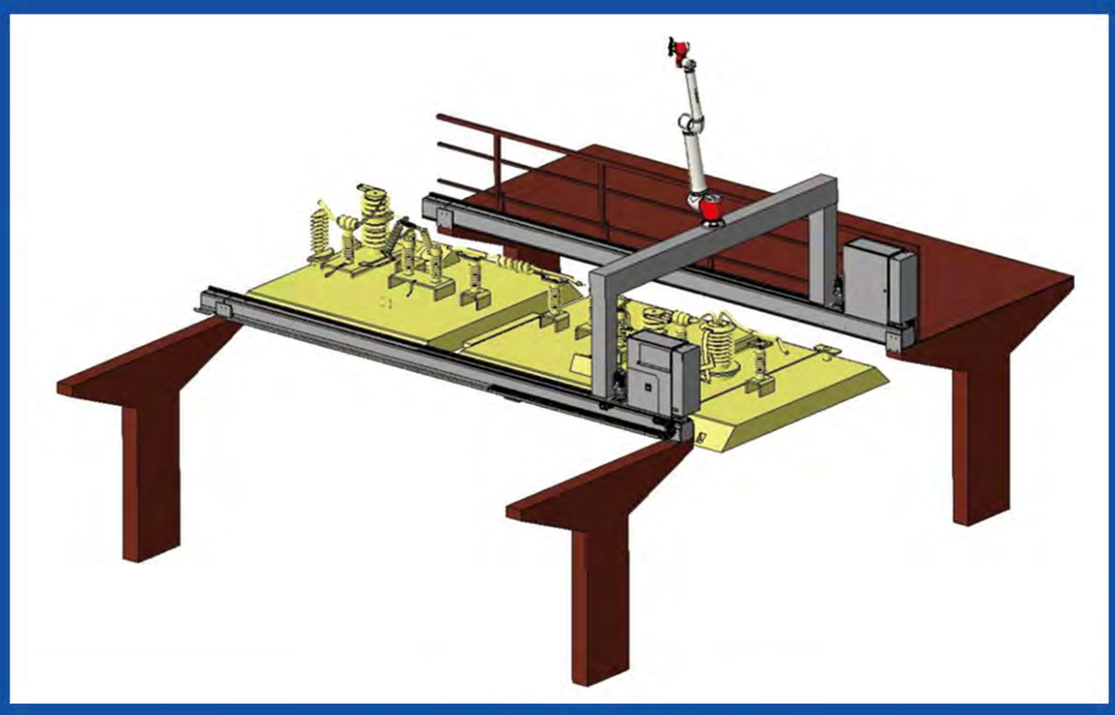
Operating Modes: One-touch fully unmanned mode vs. Manual-start automated mode.

Safety Features: Roof state monitoring, emergency collision avoidance, and fail-safe stop mechanisms.

Environment: Designed for standardized depot maintenance tracks.



Dual-arm Solution



Single-arm Solution

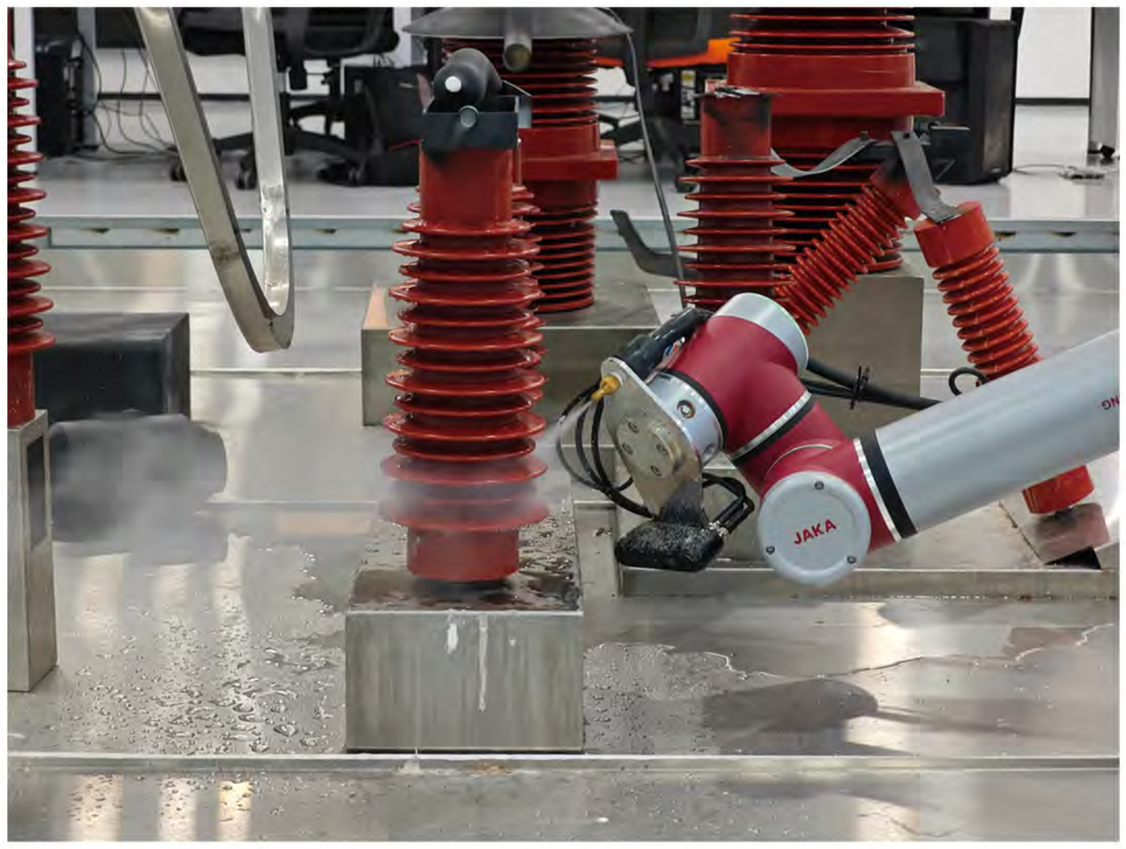
	Collaborative Robotic Arm	High Temperature Steam Boiler	RGV Trolley + 40 m Dual Track	Gantry Frame	Water Purifier	Depth Camera	Environment-monitoring Camera	Electric Control Console
Dual-arm Solution	2	2	2	0	1	2	1~2	1
Single-arm Solution	1	1	2	1	1	1	1~2	1
Component Function	**High-Temp Steam Boiler:** Generates high-pressure steam for sanitation. **Collaborative Robotic Arm:** Equipped with depth cameras for precision targeting. **RGV & Track System:** Provides the mobile foundation for the robotic arm. **Water Purification Unit:** Removes minerals from municipal water to prevent scale buildup in the boiler. **Environment Monitoring System:** Manages model identification and real-time roof safety monitoring. **Control Console:** Centralized power and logic management with an HMI interface.							

Product Advantages

- **Intelligent Task Brain:** Enables autonomous movement, dynamic path planning, and multi-model adaptation.
- **Multi-Modal Navigation:** Integrates vision-based recognition with rail-movement control for superior alignment.
- **Precision Cleaning:** Real-time identification of insulator profile/orientation for "micro-consumption" cleaning.
- **Centralized Oversight:** Full-cycle process monitoring—from positioning and identification to cleaning and reset—triggered by a single command.

Applications





Widely deployed in rolling stock maintenance depots for automated roof insulator cleaning, supporting mixed-fleet operations. This solution effectively removes personnel from high-risk, high-intensity maintenance tasks, driving the digital transformation of railway power infrastructure.



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