

BLOG

Inside Dahua AIoT Industrial Park: How Innovation is Shaping the Future of Intelligent Manufacturing



In today's fast-evolving landscape of intelligent manufacturing, Dahua Technology is shaping a new benchmark with its advanced innovation capabilities and efficient production models, creating a fully digitalized and automated smart manufacturing system.

From being recognized with China's "National Worker Pioneer" award last year to being named one of the country's first "Excellence-level Smart Factories" this year, the Dahua AIoT Industrial Park has made great strides in transforming its production. The factory features key innovations such as automated assembly, unmanned testing, visualized supervision, and autonomous logistics. It fully integrates people, machines, materials, methods, and environment to deliver an exceptional user experience to customers worldwide.

A Model of Human-Machine Collaboration

By combining intelligent material management, automated assembly and testing, flexible production lines, an AIoT digital system, and digital twin technology, Dahua has created a highly adaptive and collaborative smart manufacturing model.

The factory's flexible production lines are designed for agility—capable of seamlessly switching between tasks at the push of a button, handling precision electronic components and complex

structural parts alike. This flexibility is made possible by the deep integration of advanced automation and intelligent equipment in key production processes:

- **Automated Screw Fastening:** Equipped with visual positioning and real-time inspection modules for precise fastening and risk prevention.
- **Airtightness Testing:** AI-powered testing in collaboration with robotic arms for fully automated operation.



- **Precision Dispensing:** Visually guided dispensing combined with real-time quality inspection.

Real-Time Digital Twin Operations

With digital twin technology, the factory operates 24/7, continuously capturing data from all equipment and production processes. It creates accurate 1:1 digital models of production lines, robots, and machinery, using real-time data to simulate production flows, monitor line status, and predict potential issues. Even during non-operating hours, smart inspections for environment, perimeter, and fire safety run automatically, with instant alerts for any anomalies. Through the operations center, managers can access live data and make informed decisions to drive efficiency and reduce costs.

Unmanned Testing & Quality Management

Dahua enhances product quality through granular market insights, modular R&D design, and intelligent testing systems. Leveraging PLM (Product Lifecycle Management), testing parameters are auto-calibrated, while a big-data-driven "Smart Test Brain" continuously fine-tunes test strategies in real time. Testing processes for mature products are streamlined, while defect predictions automatically trigger stricter testing standards, ensuring fast, high-quality output.



For end-to-end quality control, every product is tracked using a unique QR code, enabling instant traceability across its entire lifecycle. This system builds a comprehensive quality data pool that supports production optimization and quality strategy adjustments.

Autonomous Logistics for High-Efficiency Operations

Dahua's smart warehouse combines vertical storage systems with a network of AGVs, intelligent conveyor lines, robotic arms, vision systems, and automated labeling equipment, all managed via a digital platform to enable fully unmanned "lights-out" factory operations.

During the inbound processes, products are automatically scanned, measured, packaged, and assigned by the Warehouse Control System (WCS), with robotic arms and AGVs handling storage placement. Outbound processes are fully automated as well—whether for full pallets, single-SKU shipments, or mixed-SKU orders—and completed within 10 minutes through coordinated efforts of AGVs, robotic arms, and conveyor lines.



Looking Ahead

From "Pioneer" to "Excellence," the Dahua AIoT Industrial Park is achieving new levels of production efficiency, product quality, and operational synergy through the deep integration of IT and OT technologies. Moving forward, Dahua will continue driving innovation and contributing to new-generation productivity, helping industries worldwide benefit from intelligent manufacturing and creating a smarter future for all.

About Dahua Technology

Dahua Technology is a world-leading video-centric AIoT solution and service provider. Committed to enabling a smarter society and better living, Dahua has deployed its products, solutions, and services in 180+ countries and regions, covering transportation, manufacturing, education, retail, banking & finance, energy, environmental protection and various industries. The company has more than 23,000 employees, with over 50% of R&D technicians. Focusing on technological innovation, Dahua has established five major research institutes, with annual R&D investment accounting for approximately 10% of its sales revenue. The company continues to explore emerging fields based on in-depth insights and layout of AIoT, and has extended its innovative businesses including iRAYPLE, Pixfra, Waythcan, Wisualarm, Dahua Memory, etc. In line with its core value of "Customer Success, Employee Achievements", Dahua strives to provide the market with excellent quality and service, create more value for customers, and proactively contribute to a safe, low-carbon, beautiful and harmonious world.

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