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# Smart Logistics Center Elevates Warehouse Automation with ASRock Industrial's iEP-5000G and UniversalAutomation.org (UAO) Runtime

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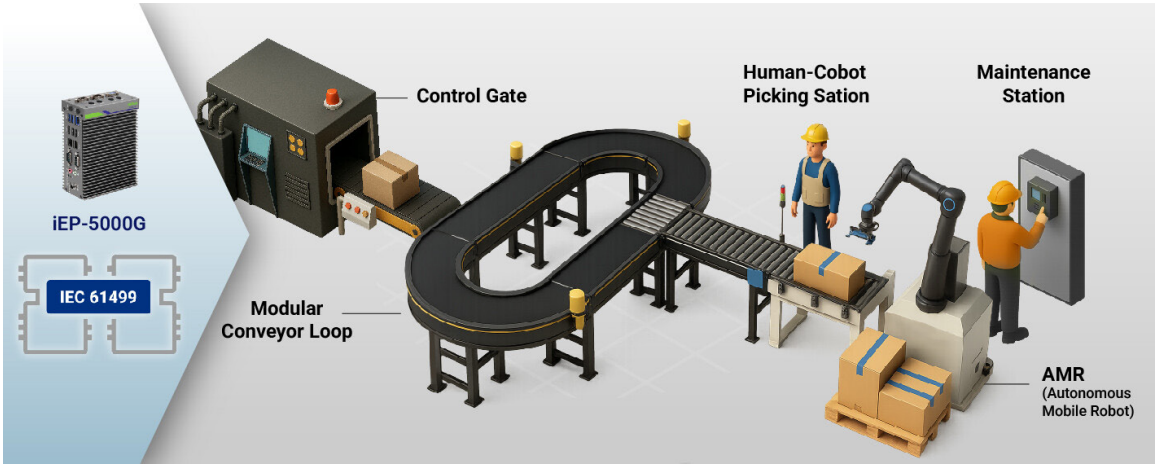
In a joint effort to modernize warehouse operations, a system integrator partnered with ASRock Industrial to deploy an intelligent hybrid automation system that integrates a human-cobot system with a modular conveyor loop, vision-based control gates, and autonomous mobile robots (AMRs). Powered by ASRock Industrial's iEP-5000G industrial edge controller, built on the Intel Atom® x6425RE processor and running IEC 61499, the system enables seamless coordination across control systems, robots, and IT platforms, bringing real-time responsiveness, efficiency, and scalability for e-commerce logistics center's workflows.

## Challenge

An e-commerce logistics center encountered operational bottlenecks stemming from manual sorting and picking processes, where reliance on human labor increased error rates, limited throughput, and delayed order fulfillment. The existing infrastructure lacked the flexibility to accommodate evolving production demands, with any process adjustments requiring time-consuming reprogramming and causing system downtime. Additionally, the absence of seamless integration across control systems, robotic components, and enterprise IT platforms created fragmented data environments, impeding real-time decision-making and system-wide synchronization. These limitations underscored the need for a unified, intelligent solution capable of delivering adaptive automation, consistent accuracy, and scalable performance across warehouse operations.

## Solution

To overcome these challenges faced by the e-commerce logistics center, a next-generation automation architecture was built on a hybrid human-cobot (collaborative robot) system, orchestrated by ASRock Industrial's iEP-5000G Industrial IoT Controller, powered by the Intel Atom® x6425RE processor and running the IEC 61499 runtime from UAO. The system integrates a modular conveyor loop and stations embedded with smart sensors and tags, enabling dynamic routing of goods to designated stations. Vision-enabled control gates equipped with RFID/NFC readers provide real-time items recognition and route coordination using IEC 61499 logic.




At human-cobot picking stations, cobots assist human operators in accurately picking items, optimized via the WILLIE system for enhanced human-machine interaction. Autonomous mobile robots (ARMs) manage the transport of bins across all stations or to packing and shipping areas. A dedicated maintenance station allows system adjustments or maintenance without disrupting operations, while continuous system monitoring ensures maximum energy efficiency and uptime. This unified, edge-driven infrastructure delivers seamless coordination across control systems, robots, and IT platforms, enabling automated goods picking and handing system tailored for the demands of modern logistics centers.

## Benefits

- **Operational Efficiency at Scale**
  The integrated automated system accelerates throughput and minimizes manual handling, enabling continuous, high-volume operations with reduced labor dependency.
- **Enhanced Accuracy and Reliability**
  Vision-guided picking and collaborative robotics significantly reduce error rates while maintaining consistent quality across workflows.
- **Future-Ready Flexibility**
  Powered by IEC 61499, the modular control logic allows for rapid reconfiguration and effortless scalability, ensuring alignment with evolving operational needs and digital transformation goals.

## Related Products

- iEP-5000G
- iEP-5010G
- iEP-5020G

## Partner Name

ASRock Industrial

## Booth Info

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