

N-iX develops a robotic testing framework to automate end-of-line functional testing

N-iX Robotics & IoT engineering lab's developed a purpose-built robotic testing framework designed to automate end-of-line functional testing for manufacturers

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/EINPresswire.com/ -- [N-iX](#) Robotics & IoT engineering lab has developed a purpose-built robotic testing framework designed to automate end-of-line functional testing for manufacturers handling mixed product ranges and strict traceability requirements.

N-iX

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The solution combines software-driven test orchestration, custom-engineered robotic end-effectors, Manufacturing Execution System (MES) integration, local AI execution, and automated test record logging. It also includes computer vision for object detection in occluded environments, and AI models trained to recognize different product types and components. Together, these capabilities support near-continuous production-floor operation.

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*Dmytro Humennyi,
Automotive Consultant at N-iX*

The framework addresses three challenges that are becoming increasingly difficult for manufacturers to manage manually: rising QA labor costs, limited availability of skilled technicians, and stricter traceability requirements. Manufacturers are facing skilled labor shortages across quality assurance and production roles. In the US, 79% of manufacturing leaders cited skilled labor

shortages as their top challenge heading into 2026. The picture is similar in Europe, where 36% of German electrical engineering firms cannot fill their open vacancies, according to the DIHK Skilled Labour Report 2025/2026.

“End-of-line testing has become one of the pressure points where labor shortages, cost control, and audit requirements collide,” said Dmytro Humennyi, Ph.D. in robotics and automatic control systems, Automotive Consultant at N-iX. “With this framework, we wanted to show that automation can go beyond repetitive handling. It can support product variation, preserve every test record, and reduce dependence on manual QA operations.”

Unlike standard robot cells designed around uniform components, the N-iX framework was engineered for real production environments where product variation, changing test sequences, and traceability requirements are part of daily operations. The framework supports mixed-product testing, adapts testing sequences based on previous step results, and integrates directly with the manufacturer’s MES.

AI tasks run locally on a single-board computer on the factory floor, allowing production-level decision-making without active cloud dependency. Test records are logged to AWS S3 to support audit-ready traceability and easier retrieval during quality reviews.

N-iX will present the framework during an upcoming webinar on July 7: "How to Automate End-of-Line Functional Testing Without Adding QA Headcount." The session will cover why initial off-the-shelf vendor trials failed, how the team built the test orchestration software and custom end-effectors, how local AI supports production-floor autonomy, and what the framework looks like in operation.

[Register for the webinar.](#)

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