



A new industrial revolution: Nikon's NEXIV automated solutions



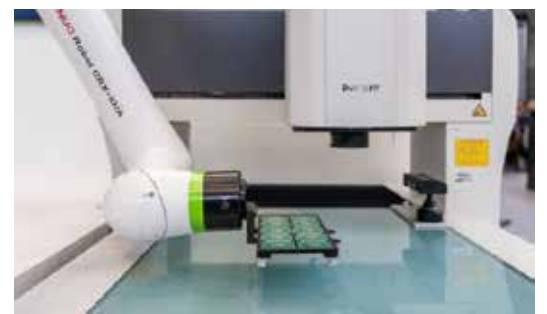
Precision and efficiency are paramount in the rapidly evolving landscape of electronics, automotive, and semiconductor industries. As manufacturers strive to meet the growing demand for high-quality products, automation has proved an essential force multiplier. Nikon, a renowned name in advanced measurement and inspection solutions, has created the NEXIV product range, offering cutting-edge automated solutions to enhance processes in these vital industries.

Integrating automation, particularly within video measurement and inspection solutions, introduces a host of benefits across industries:

1. **Amplifying the speed and accuracy of manufacturing operations.** By leveraging NEXIV's advanced capabilities, manufacturers can streamline intricate measurement and inspection tasks that previously relied on manual intervention. Nikon's VMZ-S series exemplifies this dedication to swiftness, demonstrating a 34% reduction in measuring duration over its predecessors. The synergy of speed and accuracy expedites

production cycles and minimises the likelihood of human error, ultimately strengthening product quality.

2. **Optimising resource allocation.** By delegating repetitive and time-consuming tasks to automated systems, skilled personnel can focus on complex tasks that demand critical decision-making and problem-solving abilities. This allows companies to harness their workforce's expertise more efficiently, driving innovation and accelerating product development.



3. **Reliable quality control.** In industries where precision is non-negotiable, incorporating automated inspection solutions, such as NEXIV systems, ensures consistent quality control. These systems can detect sub-micron-scale deviations, guaranteeing products meet stringent industry standards and regulatory requirements. This enhances customer satisfaction and fosters a

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reputation for delivering superior products in a competitive marketplace.

SEMICONDUCTORS DRIVE INNOVATION IN THE DIGITAL ERA

Semiconductors are shaping the future of the modern world by driving innovation in the digital era and powering the global economy. Their indispensable role in developing electronic devices impacts multiple sectors, from telecoms and automotive to military and healthcare. Moreover, semiconductors' contribution to the evolution of artificial intelligence, such as machine and deep learning, places them at the leading edge of technological progress.

The semiconductor journey, from the invention of the transistor to the Internet of Things (IoT), has been marked by a trend towards miniaturisation. This has led to a significant increase in the demand for specialised skills in the field of metrology, just when the number of qualified engineers is declining. Consequently, in an effort to meet the growing needs of the industry, the traditional practice of conducting manual measurements using optical microscopes has hit a wall of limitations.



To address these challenges, Nikon has designed the NEXIV VMZ-NWL 200, an automatic wafer measurement system. This system addresses the shortage of skilled technicians for manual measurements by providing automated measurements for 6-inch or 8-inch wafers. Its user-friendly software facilitates intuitive chip selection, enabling reliable and precise chip measurement for various applications. Additionally, the system's ability to track measurement times and programs improves traceability, further streamlining the semiconductor industry's evolving demands for precision and efficiency.

Through integrating the NEXIV VMZ-NWL 200 video measuring system, Nikon offers an automated solution for improving quality control procedures within silicon wafer manufacturing companies. Using dual 2D and 3D optics, the NEXIV VMZ-NWL 200 can rapidly inspect wafer ID codes that have been laser inscribed onto the wafer surface.

The system is seamlessly linked to an automatic wafer loader, enabling the efficient transfer of semiconductor wafers from a front-opening unified pod (FOUP) to the video measuring system, eliminating the need for manual handling. This

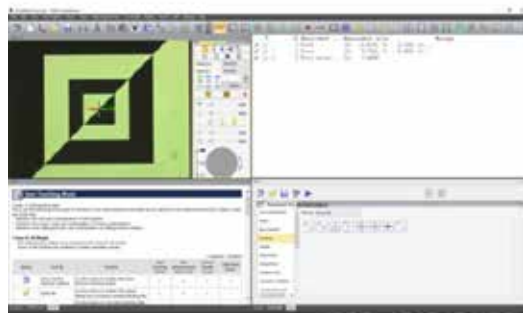
process not only ensures precision and accuracy but also reduces the possibility of errors and waste during the various processing steps in the fabrication (FAB) process.

The successful implementation of this automated quality control solution in various foundries worldwide highlights Nikon's commitment to refining real-time inspection practices in industrial production in alignment with its Quality 4.0 approach.

SPEED, ACCURACY, AND USABILITY THROUGH AUTOMATION

NEXIV systems can be integrated with collaborative robots ("cobots") capable of undertaking tedious and repetitive tasks and offering automated solutions for the production environment. By lifting heavy objects up to 35 kg, as well as loading fixtures, facilitating QR scanning, and identifying programs, assembly lines can be automated, and the health of the workforce can be safeguarded.

Nikon's NEXIV automated solutions include a sophisticated suite of software that manages precision measurements and automation. This software guides the measurement process, such as through synchronisation of optical elements, edge detection, and image alignment, thereby accelerating measurement speeds and bolstering industrial transformation.



The Software Development Kit (SDK) for remote control is a vital resource for programming user software modules to oversee and automate NEXIV video measuring systems. Integrating NEXIV with component carrier conveyor systems enables users to automate component carriers and measurement procedures on the production floor or remotely. Subsequent in-depth analyses of production data facilitate process optimisation.

Nikon's NEXIV automated solutions elevate precision and efficiency across various industries. With dedicated optical systems, seamless automation, and intuitive software, Nikon demonstrates exceptional commitment to the highest manufacturing standards. As industries continue their transformation, NEXIV's capacity to augment speed, accuracy, and reliability helps shape the future of technology.

To discover more, contact a member of the Nikon team today.