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ENSURING QUALITY AT EVERY STEP: KAT MEKATRONIK'S COMMITMENT TO EXCELLENCE WITH MEK AOI TECHNOLOGY

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Kat Mekatronik, based in Istanbul, Turkey, is a family-owned business with seven decades of experience in the automotive electronics sector. Specializing in high-quality components for a wide range of industries, including agriculture, marine, off-highway vehicles, and passenger cars, the company is trusted by prestigious OEM clients such as Volkswagen AG, BMW AG, and Ford Motor Company.

With a focus on modern, efficient production processes, Kat Mekatronik follows an all-in-one-place approach, allowing them to carry out all their processes in-house. These processes include plastic injection, moulding, metal works, painting, assembly, and most importantly, SMT. This integrated approach ensures quality control at every stage of production. However, as the demand for precision and reliability in the automotive electronics sector continues to rise, Kat Mekatronik recognized the need to further enhance its production processes.



A critical aspect of this commitment to quality is the company's approach to inspection. Relying on human inspection methods creates challenges in detecting small defects on PCBs—failures that could have significant consequences. "Relying solely on human inspection for board inspections is risky due to the small and hard-to-detect nature of failures," explains Murat Erdik, Assistant Production Manager at Kat Mekatronik. "We need a more advanced solution to ensure the highest level of quality and to meet our clients' stringent requirements."

CHOOSING THE RIGHT SOLUTION

With a history of using AOI systems in their production, Kat Mekatronik had a clear understanding of the capabilities they were seeking in a new machine. The company's previous system had shown limitations, particularly when it came to detecting minor failures. These undetected issues accumulated over time, increasing electrical errors and issues at the end of the production line. Murat and his team realized that to maintain their competitive edge, they needed to invest in a more advanced and reliable solution.

After researching available options and consulting with industry leaders, Kat Mekatronik decided to invest in a Mek (Marantz Electronics) AOI system, specifically the iSpectorJ2 desktop AOI. Mek, a well-established and trusted name in the electronics industry, is known for its cutting-edge technology and comprehensive support.



Murat's decision was influenced not only by the product's technical capabilities but also by the reliable and proactive communication from the Mek team. "Whenever we had questions, they were quick to respond and provide solutions. Their dedication to customer satisfaction was a key factor in choosing their AOI machine," Murat explains.

SMOOTH INTEGRATION AND IMMEDIATE IMPACT

The integration of the Mek AOI system into Kat Mekatronik's production line was seamless. As the company was already familiar with AOI technology, replacing their previous system with the iSpector JDz model was straightforward, allowing for minimal disruption to their ongoing production processes.

Kat Mekatronik primarily inspects the soldering of sockets and mechanical switches. The AOI system plays a vital role in identifying defects in soldering quality. After assembling sockets and mechanical switches, the company performs soldering using a wave soldering machine. The AOI inspection is conducted immediately after soldering and before the parts are loaded into the assembly machine to produce the final product.

The impact of the new system was almost immediate. "We were able to detect failures in the wave soldering process much earlier, which allowed us to address problems before they became more significant," Murat says. This early detection played a crucial role in minimizing defects and product loss. "The machine is able to easily detect the soldering issues we most commonly suffer from—such as short circuits, solder bridges, insufficient solder, and excessive solder. It handles these problems effectively and with high accuracy," Murat states.

ENHANCING PRODUCT QUALITY AND MEETING INDUSTRY STANDARDS

Since the installation of the Mek AOI system, Kat Mekatronik has seen substantial improvements in product quality. The early identification of defects has significantly reduced electrical errors and enhanced overall product reliability. "We've noticed a remarkable reduction in product losses, and the overall quality of our final products has improved significantly," Murat shares. These improvements are particularly important for the automotive industry, where reliability and safety are of paramount importance.

In addition to meeting internal production standards, the AOI system has also contributed to enhancing customer satisfaction. The AOI system has proven to be an effective tool during customer audits. "During audits, we always showcase the AOI machine and explain its role in our production process," Murat says. "It shows our commitment to high-quality, reliable production and leaves a positive impression on our customers."

TRAINING AND ONGOING SUPPORT

One of the standout aspects of working with Mek is the comprehensive training and ongoing support provided by their

team. "The training we received from Mek was highly efficient and well-structured, enabling us to learn how to program the system and conduct inspections from day one," Murat explains. This hands-on training ensured that the transition to the new AOI system was smooth, and Kat Mekatronik could quickly integrate the technology into their operations.

Mek's commitment to customer satisfaction didn't stop with the installation. "Whenever we need support, the Mek team is there to help us," Murat adds. "Their technical support has been exceptional, ensuring we continue to get the most out of our AOI machine."

LOOKING TOWARD THE FUTURE

The iSpector JDz model has proven to be an essential tool in Kat Mekatronik's production line. While the company is currently focused on meeting the demands of its automotive clients, Murat and his team are looking toward the future. "We see potential for even greater functionality in the future," he says. "Incorporating machine learning to detect new types of defects and having automated reports for failure counts would be useful for improving our processes even further."

However, even without these future enhancements, the AOI machine has already had a significant impact on Kat Mekatronik's operations. By detecting issues earlier in the process, the system has contributed to reducing errors and improving product quality across the board.

A STRONG PARTNERSHIP FOR CONTINUED SUCCESS

For Kat Mekatronik, the decision to invest in the Mek AOI machine has been part of their ongoing commitment to excellence. The system's performance has been flawless, delivering the accuracy and reliability that the company demands in a highly technical, safety critical and competitive industry. "We are very satisfied with the machine's capabilities and performance," Murat says. "It has been an excellent investment."

Although the AOI system is currently used on just one production line, the benefits have been far-reaching. "We definitely recommend the Mek AOI systems to other businesses in our industry," Murat concludes. "The machine's performance and the support we've received from Mek have been outstanding, and we are proud to share our positive experience with others."

Kat Mekatronik's partnership with Mek (Marantz Electronics) has not only enhanced their production efficiency and product quality but has also reinforced their position as a trusted leader in the automotive electronics industry.

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