ASMPT enabling the digital world

SIEMENS

A game changer in SMT production

Siemens banks on intelligent automation with ASMPT

The challenge

Siemens Smart Infrastructure develops pioneering building technologies at its global headquarters in Zug, Switzerland. The plant manufactures high-precision controllers for building automation as well as fire alarm panels and detectors for smoke, fire, and various gases. The production environment is demanding. Roughly 3,500 different components ranging from the tiniest 0201m parts to large and heavy OSCs are processed each day on four production lines. Product setups change six to eight times per day on each line. Despite the factory's already high level of efficiency, Siemens constantly focuses on making further improvements in order to avoid downtimes and become even more productive. The primary goal is to keep shortening the setup times and minimize the fault rates.

"The Automated Program Change feature of ASMPT lines is a real highlight for us. Product changeovers can now be executed sequentially without having to empty the line beforehand. Using the Hermes protocol, each machine loads the new program automatically. This function makes us pioneers in Europe and has enabled us to eliminate a potential source of errors for good."

Roland Schönenberger
Head of Electronics Manufacturing and Quality
at Siemens Smart Infrastructure Buildings

- ↓ Setup times reduced by 35%
- ↑ More automation
- ↑ More production flexibility
- ↓ Lower non-conformity costs
- ↑ More efficient hardware utilization
- ↓ More effective staff deployment

The solution

Automated program changeovers error-free and manufacturer-independent
Siemens met its improvement targets through the perfect interaction of hardware and software. In terms of hardware, the Zug plant employs state-of-the-art equipment from ASMPT, including SIPLACE SX placement systems, DEK NeoHorizon and DEK TQ solder paste printers, as well as the Process Lens SPI system, which works with the WORKS Optimization application to ensure precise control of the printing process. The plant also uses almost the entire WORKS Software Suite in order to optimize setup processes and material flows. The Automated Program Change (APC) feature has proven to be a real game changer. Whereas previously the corresponding programs had to be loaded manually on each machine when the product changed – a time-consuming and error-prone process – APC now enables fully automatic program changes on the SMT line, even on non-ASMPT equipment.

Networking based on the Hermes standard for seamless integration
This seamless interaction is made possible because the entire line is horizontally networked in accordance with the IPC-HERMES-9852 standard. A QR code on the first circuit board of a new batch triggers the product changeover at the start of the line. The product information is then forwarded down the entire line via the Hermes protocol, causing each machine to download the appropriate program from the cloud. The open and modular architecture of the ASMPT solution enables the seamless integration of ASMPT machines and third-party systems alike, making it possible to automate in stages as needed.

Real-time data analysis for maximum efficiency
Automation and networking offer much more than just the Automated Program Change feature – they open the door to an entirely new set of opportunities in the areas of data analysis and performance monitoring. All status information and KPIs of the production lines – including machine statuses, wait times, response times in the event of malfunctions, timestamps, and AOI quality data – are transferred to the cloud in real time. Visual dashboards make it possible to discover weak points, identify slow processes, and make the most of potential improvements.

About Siemens Smart Infrastructure

Headquartered in Zug, Switzerland, Siemens Smart Infrastructure (SI) shapes the market for intelligent, adaptive infrastructures. The company connects energy systems, buildings and industries to meet the challenges of urbanization and climate change. SI offers customers a comprehensive portfolio from a single source – with products, systems, solutions and services ranging from energy generation to consumption. In the fiscal year ending September 30, 2024, the company generated sales of 21.4 billion euros and employed roughly 75,000 people worldwide.

The success story

Implementing Automated Program Change has improved the production operation at the Zug plant considerably. Program changeover times were reduced by 35 percent. The lines now react much more quickly to new product requirements, and already scarce operators are deployed more efficiently and in a more targeted manner. In addition, fault sources resulting from manual program changes have been almost completely eliminated, resulting in a marked reduction of nonconformity costs. Another key benefit is the seamless integration of hardware and software, which allows for the more efficient use of existing equipment that makes additional investments in new equipment unnecessary. Getting more out of the existing resources has resulted in a noticeable reduction of operating costs. At the same time, the comprehensive real-time analysis of data provides the foundation for continuous quality improvements because inconsistent processes can now be detected and fixed at an early stage

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