

SIEMENS

“Exactly what we need!”

WORKS Logistics at Siemens “Gerätewerk Amberg”



The challenge

To get the right quantity of materials to the right machine on the right SMT production line at the right time, Siemens “Gerätewerk Amberg” installed a new software application from ASMPT’s WORKS Software Suite. With the time-based WORKS Logistics workflow solution, the factory’s supply logistics now run like clockwork.



“The time required for material orders was reduced significantly with WORKS Logistics, and manual reordering has become a thing of the past ... The new solution has also reduced the transport times significantly. In addition, we were able to further reduce the frequency and duration of machine standstills.”

Christian Angermeier

Group Leader Printed Circuit Boards and Device Planning at Siemens “Gerätewerk Amberg”

“Much of the production on our SMT lines is automated,” explains Christian Angermeier, Group Leader Printed Circuit Boards and Device Planning at Siemens “Gerätewerk Amberg”. “Since skilled workers are scarce and costs must be kept under control, we constantly optimize the deployment of our employees and our production resources.”

Siemens “Gerätewerk Amberg” currently runs two production lines with DEK solder paste printers and [SIPLACE SX](#), X4 and X3 placement machines from ASMPT. The production materials are kept in vertical storage systems that are linked to [Factory Material Manager](#) software.

Manual processes can be error-prone

“Although our production processes run very well, there is always room for improvement,” says Christian Angermeier. “For example, we set a clear goal for our material flow processes: Completely avoid the manual reordering of material for the ongoing production process. We wanted to completely exclude the human factor. For example, if the component reels for refills get requested too late or incorrectly, the line can quickly come to a short halt. Automating the material requests was also supposed to optimize the travel times for material transports.”

The problems described above are not uncommon in the industry. The supply of materials is mostly perceived as a statically planned task, but this approach does not do justice to the conditions on the factory floor. At many electronics manufacturers, the materials needed for an order are often removed from storage in their entirety and delivered to the lines prior to the start of the production run. As a result, the operation loses transparency regarding inventories and ties up material that is not really needed.

“What we need is a time-based closed-loop control system that dynamically computes even the non-linear material requirements during setups and tear-downs and compensates for other disturbances as well,” says Angermeier. “This is the only way to ensure a reliable flow of material. It also eliminates the need for excess buffer capacities along the line.”

The solution

ASMPT was able to solve the logistical challenges of Siemens “Gerätewerk Amberg” with a new software application [WORKS Logistics](#) from its [WORKS Software Suite](#).



Christian Angermeier, Group Leader Printed Circuit Boards and Device Planning, and Markus Donhauser, Manager Software Applications for Printed Circuit Board Production, at Siemens “Gerätewerk Amberg”

About Siemens “Gerätewerk Amberg”

With approximately 1,700 employees, Siemens “Gerätewerk Amberg” and its sister factory in Cham manufacture products and systems for switching, protecting, monitoring and controlling low-voltage users. The product portfolio comprises contactors, overload relays, circuit breakers, motor starters, control and signaling devices, position switches, function relays and safety technology for the global market.

Dynamic calculation of material requirements

The Material Demand Calculation function from WORKS Logistics uses planned production jobs, current inventory levels on the machines and actual material consumption data to dynamically compute and continuously update the line’s material needs. The resulting information forms the basis for the automatic control and optimization of material flows, material requests messages to central and intermediate storage locations, and time-driven transport jobs. This way, the production lines can be supplied with material every two hours, for example. The length of the calculation and supply interval, the so-called time slice, gets set for each line.

A production schedule created in WORKS Logistics forms the basis for the Material Demand Calculation function. Once the planning has been completed and approved, the tool continuously calculates the material requirements, taking into account the time required for retrievals and setup preparation operations. The setup tasks are then transferred to the WORKS Preparation application, and the jobs to be produced are transferred from WORKS Logistics to the SIPLACE Line Control software. Factory Material Manager automatically receives the exact bill of material for procuring the necessary components within the respective time slice. This ensures that the retrieval, setup and production processes are always in sync with the previously defined job order.



“Together with our proven system partner ASMPT, we achieved all of our project targets in a surprisingly short time.”

Christian Angermeier

With the [WORKS Operations](#) application operators on the line can see what's going on and be deployed in the most efficient way possible.

“Whether all of this would work as well as its sounds in theory had to be shown in a detailed field test in our factory,” says Christian Angermeier. “Due to our traditionally very good and close relationship with ASMPT, we learned about the WORKS Logistics project at a very early stage and decided to implement it as a full-test user starting in July 2021.”

Field test in remote mode

The WORKS Logistics project was consistently advanced through field testing and finally released in mid-August. Because of the pandemic, the entire cooperation between Siemens and ASMPT was set up and executed remotely via Microsoft Teams.

“With such a far-reaching software implementation, the devil is often in the details. It's a good thing that I was able to rely on the active cooperation of my colleague Markus Donhausser, who supervises software applications in the printed circuit board production at Siemens “Gerätewerk Amberg”. Together, we identified problems, discussed pending issues, supported the production operation. and coordinated the communication with the developers at ASMPT,” remembers Christian Angermeier. “The forecast calculations across different time intervals are highly complex and had to be adjusted occasionally. We discussed and analyzed such matters with the developers at ASMPT, who always managed to quickly work out a target-oriented solution. Today, the workflow, which comprises several software applications, runs productively and with perfect stability.

Project goals achieved

“We were able to achieve all of our project goals in close cooperation with our proven system partner ASMPT. The considerable effort required to implement the solution was definitely worth it,” says Christian Angermeier. “Our forecasts are now much more precise. The time required to fulfill material requests was reduced significantly with WORKS Logistics, and manual reordering has become a thing of the past. The human factor has been completely removed from the process. And in addition to significantly reducing the material travel times, the new workflow solution has further cut down on the frequency and duration of machine standstills.”

Software is never finished, and Siemens “Gerätewerk Amberg” is no exception. “We are constantly coming up with new issues that we will tackle together with ASMPT in the future,” says Christian Angermeier. “Together, we will make WORKS Logistics even more powerful and flexible, for example by interfacing with higher-level manufacturing execution systems. We are also constantly improving the parameters. For example, larger time slices can reduce the number of transport trips.”

As a classic digital transformation project for Industry 4.0, WORKS Logistics was accepted right away by the Siemens staff, who give it consistently high grades. The new solution avoids all-too-human errors during the ordering process and cuts down on stress and unnecessary trips. The material is always delivered to the line correctly and on time, which allows employees to focus on their main tasks. Accordingly, everyone on the factory floor is full of praise for the new solution from ASMPT: “It is exactly what we need!”

ASMPT

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