

Tecnomatix

Continental Automotive Group

Changing production requirements are handled easily with digital factory software

Industry

Automotive and transportation

Business challenges

Frequent product alterations and quantity changes

Many production line adjustments

Keys to success

Digital material flow simulation

What-if simulations to compare alternate production line scenarios

Results

Problems identified and resolved faster

Greater manufacturing flexibility

Higher output and less waste

Optimized material flows

Investment decisions validated

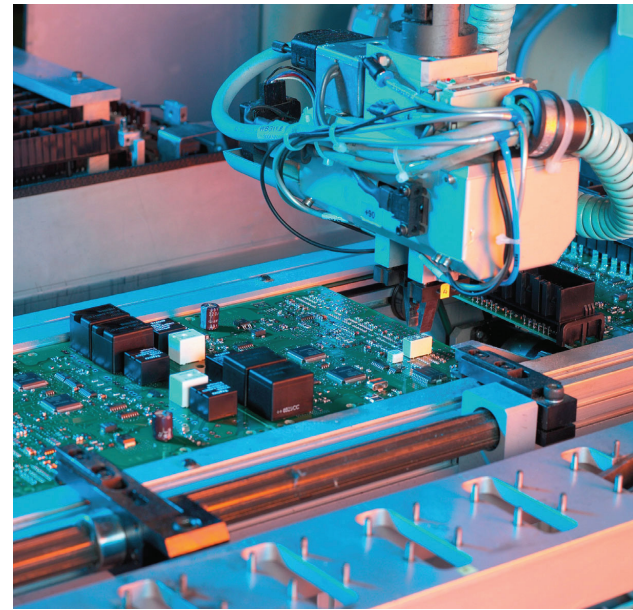
Tecnomatix Plant Simulation models give planners more flexibility; material flow simulation also increases output and reduces waste

Making driving safe and comfortable

Continental Automotive GmbH is one of the leading automotive suppliers in the world. The company's three divisions – Chassis & Safety, Powertrain and Interior – develop and manufacture products that make driving safer (air bags and sensors; brake and chassis control systems), more fuel efficient (gasoline and diesel injection systems) and more fun (infotainment systems and multifunctional displays).

The company's Regensburg, Germany facility is its biggest electronics plant. In an area of 16,500 square meters (approximately 177,000 square feet), nearly 2,000 employees produce about 67 million electronic devices per year. The plant operates 24/7, running 22 lines for surface-mounted devices (SMDs) along with other product-specific assembly and inspection lines.

The company's different business units demand quite a lot from the manufacturing planners at the Regensburg plant. Frequent product alternations as well as quantity changes require repeated production line adjustments. To support

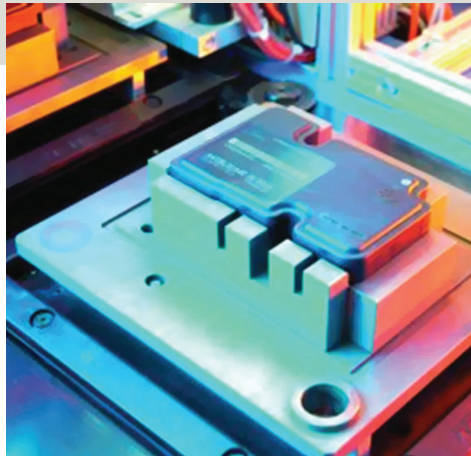


A printed circuit board automatically mounted with components.

the planners in this complex effort, the plant established an internal consulting agency, called the "Lean Office," that provides the business units with an expert production infrastructure and manufacturing expertise. "We offer our customers, the individual business units, a kind of carefree package for the manufacturing of their products," says Dr. Markus Fischer, head of industrial engineering at Continental Regensburg.

“The possibilities of a simulation are really great for reducing costs.”

Stefan Lamken
Lean Office Process Consultant
Continental Regensburg



Electronic component on work-piece carrier.



Customized laser marking of a manufactured electronic assembly.

Identifying problems through simulation

The Lean Office increasingly relies on advanced technology, such as the Tecnomatix® software from Siemens PLM Software. This digital manufacturing solution was chosen after a rigorous benchmarking process – involving the production process for side airbag satellites (sensors used to detect an impact) – that turned out 120,000 parts per day, covering more than 200 variants. The task was to simulate material flow between processing stations, starting with preliminary assembly, through to SMD mounting and all the way to customized packaging. After the process was modeled in Tecnomatix Plant Simulation (in two weeks), the resulting simulation won over the plant’s management, and Tecnomatix software was quickly integrated into the Lean Office’s technology portfolio.

The office uses the Tecnomatix material flow simulation functionality to examine and optimize new production lines, as well as to optimize existing ones. The lines can be evaluated and optimized for various parameters, such as throughput, cycle times, performance limits, interferences, and so on. To make reliable predictions, simulation models must map the real line as accurately as possible. Also, modifications must be tracked carefully. Given the frequent product alternations, the goal is to quickly identify potential problems in software and fix them before the actual process begins. “With a simulation, many

problems are easily fixed,” explains Stefan Lamken, a process consultant to the Lean Office and key user of Tecnomatix.

Normally at Regensburg Plant, the manufacturing planners design lines with precise and successive processing stations. In this context, a simulation model is used to verify the planned performance of the line. “For our planners, Tecnomatix Plant Simulation is a very interesting tool,” says Fischer. “An offline simulation shows solutions that sometimes surprise even the most experienced colleague.” For example, a multi-product line with up to 100 variants did not reach the theoretical targeted output. An unforeseen bottleneck unbalanced the material flow. The Tecnomatix simulation showed that a processing station was operating too quickly, resulting in jams at subsequent stations. The unexpected solution – slowing down the cycle for that particular station – would have been discovered much later had the simulation not been used.

Supporting sound financial decisions

In another situation, the goal was to increase the output of a production line. Manufacturing planners developed four possible scenarios, noting the cost of each possibility. By evaluating the four alternatives using Tecnomatix simulations, the company was able to see that the most economical approach would meet the desired goal. “We were elated with the software,” recalls Lamken. “With it, we

Solutions/Services

Tecnomatix Plant Simulation
www.siemens.com/tecnomatix

Customer's primary business

Continental Automotive Group is one of the world's leading automotive suppliers.
www.conti-online.com

Customer location

Regensburg
Germany

"Material flows can be optimized in different ways, without having a single second of downtime."

Stefan Lamken
Lean Office Process Consultant
Continental Regensburg

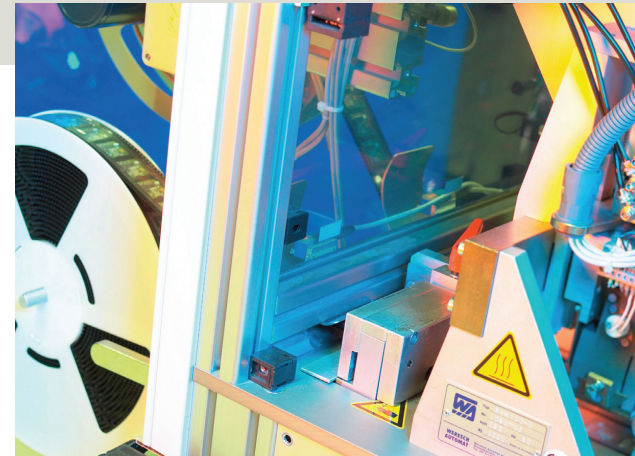
"Tecnomatix simulations give us the flexibility we need in our production processes to perfectly meet customers' demands."

Dr. Markus Fischer
Head of Industrial Engineering
Continental Regensburg

could see that the cheapest concept delivered as much additional output as the most expensive one." Overall, this is one of the key advantages of the Tecnomatix solution: accurate performance data on which to base financial decisions.

Tecnomatix also saves money by eliminating the need for time-consuming tests on actual production lines. For example, an SMD line occasionally bottlenecked and jammed, requiring operator intervention to resolve the problem. This jeopardized product quality and affected the line's performance. A cooling buffer solved these problems. A Tecnomatix simulation took the solution a step further by showing how the buffer could also enable higher output. This was determined without performing any physical tests. "The possibilities of a simulation are really great for reducing costs," says Lamken.

In addition to verifying new and revised production processes, the Lean Office uses Tecnomatix to minimize stock and to reduce waste. Questions regarding the ideal number of work-piece carriers in a line are answered in detail by the software. At the same time, simulation makes it possible to consider the effects of



Blister belt machine for packaging of SMD components.

various external conditions, such as potential supply disturbances and personnel changes. "With Tecnomatix we are able to evaluate various scenarios in the planning stages," says Fischer. "With this capability, we have the necessary flexibility to perfectly meet customers' demands."

Currently, the Lean Office uses Tecnomatix Plant Simulation models on approximately eight projects per year, although that number is growing. "Every manufacturing planner who has experienced the benefits of simulation comes back to us and our services," says Lamken. "Digital material flow simulation with Tecnomatix has enormous potential at our Regensburg plant."

Siemens Industry Software

Americas +1 800 498 5351
Europe +44 (0) 1276 702000
Asia-Pacific +852 2230 3333

www.siemens.com/tecnomatix

© 2011 Siemens Product Lifecycle Management Software Inc. All rights reserved. Siemens and the Siemens logo are registered trademarks of Siemens AG. D-Cubed, Femap, Geolus, GO PLM, I-deas, Insight, JT, NX, Parasolid, Solid Edge, Teamcenter, Tecnomatix and Velocity Series are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. All other logos, trademarks, registered trademarks or service marks used herein are the property of their respective holders.

Z1 25134 8/11 C