

SIEMENS

Ingenuity for life

Automotive and transportation

Guangzhou MINO Auto Equipment

MINO saves time with Tecnomatix virtual commissioning solutions

Product

Tecnomatix

Business challenges

Leverage accurate process definitions to support regulatory compliance

Detect and eliminate collisions in production lines

Simulate and synchronize multi-robot and equipment accessibility and operability

Keys to success

Design and plan production lines in 3D

Virtual commissioning connected with PLCs for collaborative simulation

Virtual debugging of robot, equipment and electrical signals throughout the production line

Build, test and install tooling and equipment in a virtual environment

Results

Improved collaboration across entire projects

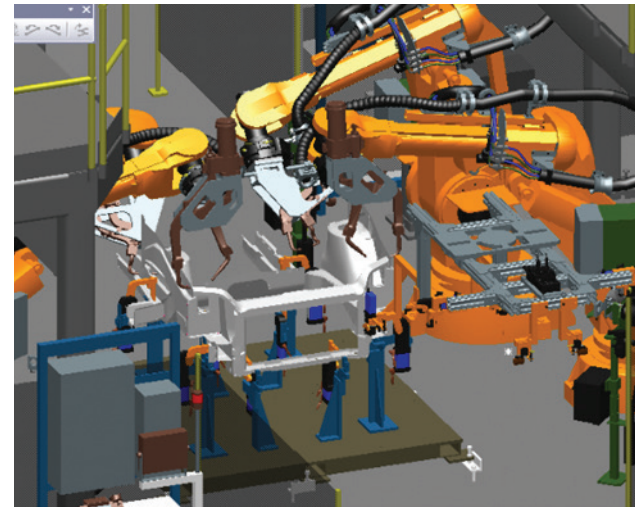
Reduced project cycles by 20 to 30 percent

MINO exchanges data and collaborates with automakers throughout the planning, simulation and commissioning stages, reducing project cycles by 20 to 30 percent

Accelerated growth

Guangzhou MINO Auto Equipment Co., Ltd. (MINO) is the largest and leading high-end automotive equipment supplier in South China. Since its establishment in 2008, MINO has attained significant expertise and has become one of the best automation equipment enterprises in China's auto industry, realizing an average annual sales growth of more than 200 percent.

Since its founding, MINO has experienced dramatic success, capital investment and expansion. Between 2010 and 2012, the company secured venture capital funding of more than 60 million renminbi (RMB). In 2013, the Chinese Ministry of Industry and Information Technology awarded MINO RMB 6.5 million in special support funds for the company's flexible conveying



system, and MINO's industrial robotic integration system was awarded RMB 3 million in support funds from the Economic and Information Commission of Guangdong Province. In 2014, the company secured additional venture capital funding of RMB 120 million and began construction of a new facility in Huadu district.

Results continued

Accurate, error-free allocation of welding spots

Fewer physical tests

Faster virtual commissioning

Reduced on-site debugging time by 35 percent



“Leveraging Tecnomatix digital manufacturing solutions to realize collaborative planning across the production line and to integrate real production (physical) with virtual manufacturing (digital) has become a larger trend in the industry.”

Yao Wenbin
General Manager
Guangzhou MINO Auto
Equipment Co., Ltd.

Leveraging Tecnomatix for enhanced competitiveness

Since the automotive industry has extensively implemented mature automation applications, automakers expect the production lines in their facilities in China to be designed using 3D planning and simulation testing. Years ago, MINO adopted Robcad™ software in the Tecnomatix® portfolio for robotic simulation. MINO used Robcad, a solution from product lifecycle management specialist (PLM) Siemens Digital Industries Software, for mechanical simulation and offline robot programming in individual work cells, but the offline programs often required control engineers to debug the control systems on site to properly synchronize the robots and equipment. Using Robcad alone, the company was unable to meet the commissioning requirements of an entire complex production line with electronic controls.

After comprehensive evaluation of a broad range of criteria for design, simulation and analysis capabilities and technical support, MINO decided to adopt a comprehensive range of Tecnomatix solutions.

The Tecnomatix portfolio of digital manufacturing solutions provides design, analysis, simulation and optimization capabilities for plants, production lines and work cells, and delivers process innovation by linking all manufacturing disciplines with product engineering, including process layout planning and design, process simulation and validation and manufacturing execution.

The use of Tecnomatix helps MINO improve the quality and accuracy of production line designs. “By simulating the whole production line, we can identify defects and problems in the design to make necessary corrections before real production,” says He Wei, production director at MINO. “Tecnomatix provides a compensation alignment capability that can deliver accuracy as high as 98 percent in production line simulation, thus reducing the amount of rework on the shop floor.”

Navigating a complex project

For implementation of the Tecnomatix solution, MINO worked closely with Siemens Digital Industries Software solution partner Guangzhou Gohope Info-tech, which helped navigate the project and provided training services. Using the body-in-white (BIW) welding line for example, Guangzhou Gohope collaborated with MINO to develop independent welding process planning, design, simulation and virtual commissioning capabilities and conducted training on the software to improve the company's efficiency and quality in body process planning. The collaboration helped shorten manufacturing preparation time on the body production line and improved the capacity of the company's auto welding lines.

In 2015, with the help of technical teams from Guangzhou Gohope and Siemens Digital Industries Software, MINO successfully wrapped up the largest project of the year – phase three of the GAC passenger car welding project, which includes 63 KUKA robots with an 80 percent level of automation and an expected annual throughput of up to 180,000 units. It took 20 engineers just half a year to finish a range of advanced simulation tests using Tecnomatix. The accomplishment leads the industry in both project lead time and technology complexity, and was unimaginable before joining hands with Guangzhou Gohope.

“Besides the Tecnomatix solution, Guangzhou Gohope's extensive practical experience in the automation industry, professional after-sales service and technical support teams, and a complete technical training system are among the main reasons that drove us to enter into long-term cooperation with them,” says Zhou Xiaowen, mechanical engineering manager at MINO.

MINO is now able to exchange data and collaborate with automakers throughout the planning, simulation and commissioning stages, meeting customer requirements while reducing project cycles by 20 to 30 percent.

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Using virtual commissioning before mechanical installation reduces on-site debugging time by 35 percent.

Transformation and upgrade

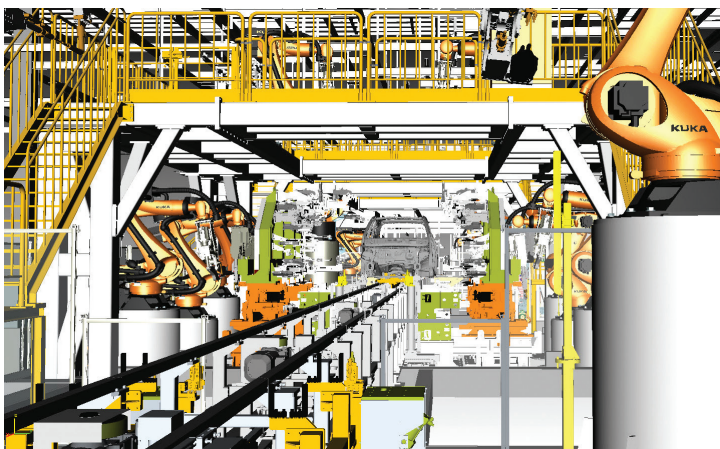
With product, technology, service and management innovations, MINO continues to meet the ever-changing production requirements of customers, claiming a unique position in the market. As a software and technical service provider, Guangzhou Gohope has played an important role in helping MINO implement its product R&D and management programs and realize standardization in design, manufacturing, installation, technical service and management.

“The road to transformation and upgrade for MINO in the future lies in innovation and efficiency,” says Yao Wenbin, general manager at MINO. “Leveraging Tecnomatix digital manufacturing solutions to realize collaborative planning across the

production line and to integrate real production (physical) with virtual manufacturing (digital) has become a larger trend in the industry. And MINO, as it has already started to apply this technology, plays a significant part in facilitating innovation of the automation planning technology.”

Technical innovation

The use of Tecnomatix enables MINO to simulate robotic behavior in the real environment, and the solution includes logic-driven equipment simulation for greater accuracy. The Process Simulate solution in the Tecnomatix portfolio provides special teaching boxes for different robots, and is able to carry out precise offline programming and event-based simulation driven from actual logic control.



Solutions/Services

Tecnomatix
siemens.com/tecomatix

Customer's primary business

Incorporated in 2008, Guangzhou MINO Auto Equipment Co., Ltd. is the largest and most comprehensive automotive equipment company in South China. Its main business is to provide body-in-white automatic welding lines, powertrain and new energy manufacturing equipment, electrical automation and robotics applications integration and services.
www.minotech.cn

Customer location

Guangzhou
China

Solution Provider Partner

Guangzhou Gohope Info-tech
www.gdcad.com

Impressive results

Based on the uniform production line planning and simulation platform shared with upstream automakers, MINO is now able to exchange data and collaborate with automakers throughout the planning, simulation and commissioning stages, meeting customer requirements while reducing project cycles by 20 to 30 percent.

The virtual commissioning solution provides a more intuitive approach to offline debugging of programmable logic controllers (PLC) and completes the virtual commissioning of BIW welding lines before getting to the shop floor. Using virtual commissioning before mechanical installation reduces on-site debugging time by 35 percent.

“By simulating the whole production line, we can identify defects and problems in the design to make necessary corrections before real production.”

He Wei
Production Director
Guangzhou MINO Auto Equipment Co., Ltd.

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