

Tecnomatix

FAW Car

Using the Tecnomatix digital manufacturing system, FAW Car substantially strengthened its R&D capability and production efficiency, saving more than 3 million yuan per car model

Industry

Automotive OEM

Business challenges

Launch models faster to capture bigger market share

Address explosive data growth and synchronize information dispersed in isolated island systems

Effectively manage product data and versions

Integrate engineering and manufacturing

Key to success

Tecnomatix digital manufacturing technology to conduct product manufacturing feasibility studies, preliminary process planning, logistics planning and layout planning before shop floor activities are carried out

Achievements

Simplified work procedures

New car projects shortened by two months

5 percent cost saving per car project

New car projects shortened by two months using Tecnomatix

A pioneer in China's auto industry

FAW Car Company Limited (FAW Car) is a subsidiary of China First Automobile Group, a pioneer in the research and development of China's auto industry. FAW Car is China's first publicly traded company in the automotive and transportation industry. Located in Changchun High-Tech Industrial Development Zone, adjacent to Changchun Automobile Industry Development Zone, FAW Car's new factory was completed and put into production in July 2004, with an area of 880,000 square meters for Phase I and an annual production capacity of 120,000 vehicles.

Big challenges; compelling solutions

Over the years, FAW Car established a huge product research and development (R&D) database. This enormous amount of information for designing and manufacturing various models resulted in a complex data management environment. The organization's approach to managing the data required a more advanced solution, such as product lifecycle management (PLM), because information bottlenecks were creating substantial obstacles to knowledge sharing and collaboration between departments.

To meet this challenge and engage proactive steps to accelerate vehicle time-to-market, reduce costs and



Achievements (continued)

Process planning turnaround reduced by 18 percent

Production line capacity increased by 25 percent

Resource utilization significantly improved

More than 3 million yuan reduction in R&D costs per car model

“Considering the company’s special needs, I think Siemens PLM Software’s solutions fit in with the company’s development strategy and will bring great benefits.”

Xie Wencai
Head of the Technical Division
FAW Car

improve overall operations, FAW Car chose the Tecnomatix® portfolio from Siemens PLM Software. Tecnomatix is a complete digital manufacturing solution that allows for the integration of all manufacturing planning procedures and product engineering, enabling integrated digital workflow.

“In terms of digital manufacturing, we have indeed encountered some difficulties, such as too many ‘information silos,’ unstructured management of product data and versions, and so on,” says Xie Wencai, who directs the Technical Division at FAW Car. “While seeking countermeasures, an opportunity arose in 2011. I attended a lecture on digital manufacturing and process planning given by Siemens PLM Software, and benefitted a lot from it. Since then, I have realized the importance and urgency of digital manufacturing and process planning. Digital manufacturing systems are not only a process of accumulating engineering information and expertise, but also a key tool for enterprises to standardize engineering processes, control business effectiveness, and manage business operations. Considering our company’s special needs, I think that Siemens PLM Software solutions fit in with the company’s development strategy and will bring great benefits.”



Smooth deployment, great support

To date, FAW Car has deployed the Process Designer solution, the Process Simulate solution and Robcad™ software, all in the Tecnomatix portfolio, for welding, painting, final assembly and other first-priority areas, especially involving the product development and production preparation stages. Using Tecnomatix, the company has conducted virtual validation and simulation, product manufacturing feasibility studies, preliminary process planning, and logistics and layout planning before manufacturing.

“Tecnomatix is a part of Siemens PLM Software’s digital manufacturing solution, supporting mainly process simulation and optimization,” notes Xie. “Nowadays, many domestic and foreign counterparts have adopted this digital manufacturing solution as a part of their PLM platform. Therefore, there is a wealth of experience worth drawing on. Moreover, Siemens PLM Software has a very professional service team, which provides regular technical training for our engineers and addresses any issues that may occur during implementation.”

By using Tecnomatix to conduct process planning, simulation and optimization for the welding, painting, final assembly and other major businesses of the A501, A130, and C131 car projects, FAW Car’s Manufacturing Engineering Division has effectively synchronized engineering, product design, and manufacturing.

Quantifiable improvements

FAW Car managers have found that the use of Tecnomatix has significantly shortened production preparation time and improved production preparation quality. Use of Tecnomatix has resulted in more than 3 million yuan saved for each vehicle model produced.

"Thanks to Tecnomatix digital manufacturing software, we have shortened welding time on the main welding line of the factory," says Yuan Xueyu, deputy chief engineer at FAW Car. "Through specific projects, we have virtually verified whether it is feasible to add 7 robots to the physical environment, and completed off-line programming for a total of 166 programs to be executed by 50 robots. In terms of the planning of the vehicle-body production line, digital process planning validation has brought great practical benefits to the company. According to past experience, using our traditional method, it took 24 months from process planning to actual production. With Tecnomatix, 2 months have been shaved on the process. In the past, 20 process planners were assigned for the planning of a new production line. With Tecnomatix, that number has been reduced to 10, and the working accuracy and planning level of the team has also been enhanced.



"In addition, the company has improved planning efficiency and accuracy by 35 percent, reduced process planning turnaround by 18 percent, increased production line capacity by 25 percent, as well as significantly improved resource utilization, including all the resources on the production line, such as welding equipment, welding guns, and industrial appliances and tools.

"There's more. Due to the prompt feedback of manufacturing engineering to design engineering made possible using Tecnomatix, we've reduced engineering changes by 15 percent as well as decreased error and design corrections. With Tecnomatix, we've truly synchronized process planning and product development!

"Overall, 5 percent has been saved from the total investment of the project."

As to painting, FAW Car finished the off-line programming of 89 subdivided colors for 5 models. Preliminary analysis and product design have been synchronized for final assembly. A digital assembly simulation was done in the early stage, identifying potential manufacturing risks. Corresponding solutions have been worked out in the preliminary stage of product development, thus avoiding the need to make equipment changes during actual production. Such proactive measures also reduce equipment costs and save time correcting design errors. During this same time frame, FAW Car finished

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Yuan Xueyu
Deputy Chief Engineer
FAW Car

Solutions/services

Tecnomatix
siemens.com/tecnomatix
Process Designer
Process Simulate
Robcad

Customer's primary businesses

FAW Car's primary businesses include R&D, manufacturing and sales of passenger vehicles and accessories.
www.fawcar.com

Customer location

Changchun, Jilin
China

"The company has improved planning efficiency and accuracy by 35 percent, reduced process planning turnaround by 18 percent, increased production line capacity by 25 percent, as well as improved resource utilization by 60 percent, including all the resources on the production line, such as welding equipment, welding guns, and industrial appliances and tools."

Yuan Xueyu
Deputy Chief Engineer
FAW Car



the virtual modeling of the A501 car project, the design of the factory environment and the detailed modeling of fixed equipment, establishing the data foundation and virtual environment for subsequent modeling.

Long-term planning

Xie concludes, "The focus of the next step is to effectively integrate various functional modules into the specific business environment of FAW Car, and integrate Tecnomatix digital manufacturing software with Siemens PLM Software's open manufacturing data platform, Teamcenter, in order to optimize the following working procedures: parts manufacturing planning, assembly process planning, resources management, plant design and

optimization, robot simulation and programming, ergonomics and personnel performance, product quality planning, and more. Through the integration of complementary capabilities, using Tecnomatix and the Manufacturing Process Planner solution in the Teamcenter portfolio, we can improve the whole production development process in the most extensive and effective manner."

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