Products
Teamcenter, Tecnomatix, NX

Business challenges
Continuously develop innovative products
Build a complete product research and development system
Coordinate resources of manufacturing facilities inside and outside China
Meet customer requirements from home and abroad

Keys to success
Standardize management of product research and development processes
Continuously improve data consistency
Re-use design knowledge and data
Comply with international standards in research and development

Results
Increased and stabilized product quality
Optimized and standardized development and production processes

Teamcenter and Tecnomatix enable Chery to increase efficiency and improve quality in research and development

Founded on January 8, 1997, Chery Automobile Co., Ltd. (Chery) is one of the leading manufacturers of autonomous car brands in China, growing through independent innovations after the reform and opening of the market in China. Over the past 20 years, Chery has built a series of renowned brands such as Arrizo, Tiggo, QQ, and Fulwin, and exported products to more than 80 countries and regions, thus becoming a beacon of independent innovation. In addition, Chery also owns such international brands as Qoros, Jaguar and Land Rover through two affiliated joint ventures. So far, Chery has achieved cumulative sales of over six million units, making the company the first passenger vehicle manufacturer in China to surpass that number, which includes cumulative exports of over 1.25 million units. Chery has led in exports of Chinese passenger vehicles for 14 years in a row.

Since its founding, Chery has attached great importance to exploring both international and domestic markets and has actively implemented the “going out” strategy, thus becoming China’s first automaker to export vehicles, complete knock-downs (CKDs), engines, automobile manufacturing
technologies and equipment to foreign countries. Chery has built 14 manufacturing bases in Wuhu, Dalian, Ordos and Changshu in China as well as in foreign countries such as Brazil, Iran, Venezuela and Russia. In the evaluation of “Top 20 in Chinese Enterprises’ Overseas Performance Survey” organized by the China International Publishing Group under the guidance of the State Council Information Office of the People’s Republic of China, Chery was honored as the “Chinese Enterprise with the Best Overseas Performance” both in 2015 and 2016, and was ranked the number one player in the equipment manufacturing industry for two consecutive years.

**Driven by innovation**

“Independent innovation” is the core of Chery’s development strategy. Since Chery’s founding, the company has adhered to independent innovation and endeavored to become a technology-oriented enterprise, investing five to ten percent of its annual turnover in new product development. Based on the V-shaped development system, Chery has formed a collaborative, bigger-picture research and development (R&D) layout integrating the development talents and processes of Qoros, Jaguar and Land Rover, and a complete R&D system that integrates development, trial manufacturing and testing of vehicles, powertrains and key parts, centering on the Automotive Engineering and Research Institute in Wuhu and powered by Chery Technical Center Shanghai.

Through independent innovation, Chery has achieved breakthroughs in an array of core technologies such as dual variable valve timing (DVVT), turbocharged gasoline direct injection (TGDI), continuously variable transmission (CVT), new energy and intelligent technology that drive the technical upgrading of all series. By the end of 2016, Chery had applied for 14,316 patents and won 9,155.

**“Since implementation of the PLM system, Chery’s market share has significantly increased and customer satisfaction has notably improved.”**

PLM Project Director
Chery Automobile
“Synchronization of the Tecnomatix solution with dimensional engineering improves Chery’s capability to predict problems before production.”

Chery Automobile Manufacturing Engineering Institute

As China’s largest exporter of passenger vehicles, Chery is actively competing in the international market and trying to keep pace with international standards of product design, development and manufacturing to achieve parity with world-class brands. The company has observed over the years that in the course of developing advanced technologies, Chinese automakers need reliable long-term partners like Siemens PLM Software, a specialist in product lifecycle management (PLM) software solutions.

Strong alliance
The partnership between Chery Automobile and Siemens PLM Software began in 2003. With the use of NX™ software, Chery was able to realize advanced digital product design. In addition, the R&D team used NX solutions to perform virtual simulation and verification of digital prototypes. This approach improved design efficiency and quality while reducing inspection costs. Over the years of cooperation between Chery and Siemens PLM Software, Chery has even established its own information technology company to promote product lifecycle digitalization and computerization throughout the industry. Here, PLM functions and other solutions are planned, implemented and promoted. The PLM implementation team includes engineers, computer scientists and Siemens PLM Software experts.

Teamcenter promotes R&D collaboration
To further support Chery’s integrated R&D management approach, the company selected and deployed Teamcenter® software for digital lifecycle management following the successful implementation of NX. As a result, Chery standardized its R&D process and now centrally manages all development projects, personnel and data. The PLM project director at Chery says, “Teamcenter has helped us to re-use design knowledge and enhanced design team collaboration. Product configuration management and engineering changes have become more efficient and accurate thanks to strict project management and reliable data flow.”

“With Teamcenter, we were able to identify many points that had to be improved,” an engineer from Chery’s PLM project team says. “The PLM system supports design collaboration and enables design information sharing, data consistency and re-use of design knowledge and data. In terms of design changes, we discovered early development issues and were able to reduce engineering changes and implementation times. In addition, the PLM system has enabled enhanced collaboration between research and development centers. This eliminates typical cross-nation and cross-region issues, such as inefficiency, inaccuracy and poor communication, and drives business development forward.”
Teamcenter supports Chery in the realization of standardized management of its product development process. Since implementation, the company manages product coding rules, drawing templates, design changes and data sharing modes on a central PLM platform. Such a highly standardized process advances product development quality, drives collaborative design and promotes communication and project collaboration. Thanks to excellent cooperation between Chery’s PLM project team and the Siemens PLM Software team, Teamcenter was quickly connected to the existing enterprise resource planning (ERP) system, enabling the exchange of product development and manufacturing resources management information. This brought the comprehensive information management of Chery to a higher level.

**Tecnomatix supports improvement of manufacturing quality**

Today, the auto market is flooded with car brands and models and competition is increasingly fierce. Poor-quality products are not recognized and accepted by consumers. Chery uses many opportunities for quality improvement and stabilization. An engineer from the dimensional control section at Chery Automobile Manufacturing Engineering Institute notes: “In recent years, we have initiated a series of quality control procedures, such as the improvement of processes and standards, the consistent control of project milestones and the addition of test equipment and tools.”

Essential quality operations include the dimensioning of product parts from structural analysis to process selection, product and process design verification, piloting, vehicle experimentation, production preparation, process review and control; the use of post-production test tools; and data analysis and feedback. With the Tecnomatix™ portfolio of digital manufacturing solutions, the

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Chery Automobile

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PLM Project Director
Chery Automobile
dimensional engineering team can intervene at the development stage, based on the digital prototype, to analyze structure, positioning, assembly processes, and other factors. On the basis of the results, the team can make suggestions as to how structures and processes can be optimized and identify possibilities for improving body alignment and product quality.

The introduction of Tecnomatix has significantly expanded the dimensional analysis capabilities for Chery's engineering team. The original dimensional analysis method was a chain calculation formula based on 2D data and was relatively inaccurate. Tecnomatix offers powerful dimensional analysis tools to conduct virtual simulations of manufacturing and assembly processes, predicting deviations and identifying causes. “Synchronization of the Tecnomatix solution with dimensional engineering improves Chery’s capability to predict problems before production,” says a dimensional control engineer at Chery. “For example, in their analyses, they have identified positioning and assembly problems of headlights, thus saving a huge amount of tool modification costs and avoiding production delays. Dimensional engineering provides engineers with product design, process, manufacturing, tooling, and quality control utilizing a quality management collaboration platform that can help solve problems, minimize time and reduce costs at the early stages of development. Chery’s dimensional engineering is already in process for high-end models, with plans to cover all models in the future.”

Joining hands with international partners
Building an international brand is Chery’s strategic goal. Chery has been advancing its globalization layout and accelerating the transformation from the “going out” of products, “going in” of technologies and plants, to “going up” of the brands. In the meantime, Chery keeps deepening overseas cooperation by implementing the product strategy, localization strategy and talent strategy, so as to build Chery into a world-renowned brand with global influence.

Chery has established nearly 1,500 distribution and service outlets, and formed business areas with Iran, Brazil, the Middle East and Latin America at the core, with presence in over 80 countries and regions across the world. Chery has a three-step internationalization strategy: before and through 2013, it was at the stage of exploration and market development; from 2014 to 2020 marks the stage of market expansion, with the aim of building an international brand with quality products and services through overseas plants and overseas marketing. After 2020, the company will be entering the stage of global operation, to build an automotive brand with international influence using world-class products and more professional services.
In the course of internationalization, Chery also needs partners with experience in the international automotive industry. This is one of the main reasons for selecting Siemens PLM Software as its partner. The PLM project director at Chery says: “We chose Siemens PLM Software solutions because the company has a wealth of experience in the international auto industry and the software is widely used by both OEMs and suppliers. The use of Teamcenter and Tecnomatix enables us to align our research and development work with international standards. The experience of Siemens PLM Software in the automotive industry supports us in integrating advanced design management methods and technologies and in realizing our global development strategy.”

“Siemens subsidiaries and professional service teams all over the world also play a special role in the establishment of Chery’s global research and development and manufacturing sites,” Chery’s PLM project director adds. “The Siemens PLM Software team in North America has a wealth of experience in vehicle analysis and is therefore an indispensable part of Chery’s dimensional engineering project.”

Chery is very optimistic about the long-term collaboration between Chery and Siemens PLM Software. “Since the implementation of the PLM system, Chery has significantly increased its market share and customer satisfaction has notably improved,” the PLM project leader says. “Currently, we are working together with Siemens PLM Software subject matter experts on deployment of the bill of materials project. Our expectations for this project are very high. After successful implementation, it will further enhance Chery’s market advantages.”