

Consumer products and retail

Yanghe Distillery

Opcenter solutions help leading global distilled spirits maker in digital transformation

Product

Opcenter

Business challenges

Limitations of hardcopy records

Aging, non-automated equipment

Complex scheduling of customized and make-to-stock orders

Improve production cost accounting

Instill quality data traceability

Keys to success

Implement Opcenter solutions for APS, MES and LIMS

Siemens' extensive experience with digital manufacturing in the food and beverage industry

Results

Reduced changeover time

Automated, intelligent scheduling

Real-time reporting of production KPIs

Enabled detailed cost accounting

Enabled quality traceability

Achieved certification from China National Accreditation Service (CNAS)

Yanghe Distillery improves production efficiency and quality and reduces costs with Siemens APS, MES, and LIMS technology

A world leader in distilled spirits

Jiangsu Yanghe Distillery Co., Ltd. (Yanghe) is located in Suqian, the capital of Chinese liquor, with total assets of 7 billion. Yanghe has nearly 30,000 employees and has built the most powerful sales network in China's liquor industry. The network has more than 9,000 direct sales, nearly 10,000 distributors, and 360,000 group or bulk purchasing units. There are 2 million point-of-sale partners and direct points of sale cover 33 provinces, cities, and autonomous regions, 333 prefecture-level cities, and 2,851 counties and districts across the country. The company is the only company in the Chinese liquor industry that owns two "Chinese Famous Liquors" and two "Chinese Time-honored Brands" in Yanghe and Shuanggou. Shuanggou wine, which originated in the Shuanggou Xia Caowan area 18 million years ago, is the source of Chinese wine. Its three production bases – Yanghe, Shuanggou and Siyang – have a total area of more than 10 square kilometers, more than 1,000 winemaking teams, more than 70,000 famous wine cellars, and an annual production capacity of 160,000 tons of famous wine.

With a wine storage capacity of 1 million tons, Yanghe is the leading enterprise with the largest output in the Baijiu liquor industry, the number one in China as well as the world. In terms of technology research and development, in 2003 it successfully cracked the



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The combination of integrated MES, APS and LIMS in a collaborative platform could help Yanghe improve accounting accuracy, provide production status for each business unit and substantially improve the operational and production efficiency while increasing product quality.





molecular balance technology for smoothness/softness and innovated and launched the extra-smooth liquor, gaining renown as the originator of extra-smooth liquor in the industry.

In 2017, in the "Top 50 Global Spirits Brand Value" rankings, Yanghe ranked second in China and third in the world, and officially moved from the old eight wines in China to the new eight wines in the world. In 2019, Yanghe was selected as BrandZ's "Top 100 Most Valuable Chinese Brands" for three consecutive years, ranking 48th on the list; it was once again selected as one of the top 500 global brands, ranking 215th in the world, increasing 175 from the previous year. Among the 65 Chinese brands on the list, Yanghe ranked 35th; at the 2018 China Brand Value Evaluation information release conference, Yanghe shares ranked first in the brand value of Chinese products with a brand value of 63.055 billion yuan. In 2020, the brand value ranked third in the light industry list of "2020 China Brand Value" and second in the liquor industry; and was shortlisted in the "Top 100 Brand Value of Chinese Listed Companies in 2020", ranking 42nd.

Comprehensive digitalization project

Yanghe's previous digitalization efforts primarily targeted business management systems, including its sales platform, enterprise resource planning (ERP) system, warehouse management system (WMS) and transportation management system (TMS). In 2018, Yanghe began the digital transformation of

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manufacturing in a comprehensive undertaking known as the 5211 Smart Factory Project. The project included six major focus areas: planning, production, quality, laboratory, equipment and cost accounting.

Yanghe's objectives for the project included standardization of production and operation, visualization of production processes, intelligent production scheduling, automated process control, refined production cost accounting and quality traceability.

Yanghe expects the project to enable its supply chain to improve coordination from dealers to first-level suppliers with seamless information flow from the production plan to product delivery. The project aims to improve the entire process of quality tracking and management through supplier materials quality, production efficiency and reduced manufacturing costs and equipment failures.

Business and technical challenges

Yanghe has diverse products and complex business processes. In researching the digitalization project, the company identified more than 100 issues in planning, production, quality, equipment and finance and more than 40 opportunities to improve efficiency and reduce cost.

One example is an on-site packaging workshop that complies with inspection standards and procedures at all levels, including in-process quality control (IPQC), final product quality control (FQC), outgoing quality control (OQC) and laboratory sampling. One of the challenges was that inspection data was recorded and circulated in hardcopy form, which could not support rapid response to inspection results and efficient management.

Another example is the typical flow-based process of liquor production. Each packaging line has a corresponding product process, and the line has a coding system for product traceability and outbound and inbound services. Because Yanghe used manual records, factory management lacked transparency.

Yanghe also faced a technical challenge: the production equipment was very old, and many machines could not directly collect data and did not operate under automated controls. Much of the equipment was undergoing a transformation to automation. Multiple systems were applied for equipment cooperation, with multiple interfaces.

Selecting Opcenter solutions

After Yanghe's plan for the digital factory was approved, the company evaluated several solution providers in China and abroad. Siemens Opcenter™ solutions satisfied the overall system structure, and the final cooperative agreement was confirmed after coordination between Yanghe, Shanghai H-VISIONS Technology, a Siemens business partner, and Siemens. There were several reasons for the selection of Siemens solutions. First, Siemens offered a manufacturing execution system (MES), Opcenter Execution Process, that is tailored for process industries. Siemens also offered Opcenter Scheduling that fulfilled Yanghe's requirements for intelligent production scheduling. The Siemens solution portfolio also included a laboratory information management system (LIMS), Opcenter Laboratory, that Yanghe could leverage to integrate suppliers and optimize collection, analysis and reporting of quality data in laboratories and production lines. The combination of integrated MES, APS and LIMS in a collaborative platform could help Yanghe improve accounting accuracy, provide production status for each business unit and substantially improve the operational and production efficiency while increasing product quality.

With a large customer base in the food and beverage and process industries and industry-specific solution capabilities, Siemens clearly illustrates its deep understanding of user requirements, its sound business-oriented solutions and global technical support.

Implementing the smart factory

Siemens helped the project team assess Yanghe's business requirements and assisted in the planning and detailed design of the overall solution. Based on the Opcenter software capabilities and business requirements, the project implementation team established 13 models addressing five aspects including automatic repair, real-time prediction, autonomous decision-making, modeling analysis and correlation analysis to greatly enhance intelligent production control. The production line process status is now visualized and prominently displayed in the production facility, providing real-time visibility and transparency of KPIs such as material loss and qualified rates.



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Solutions/services

Opcenter Scheduling Opcenter Execution Process Opcenter Laboratory siemens.com/opcenter

Customer's primary business

Yanghe Distillery has been included in the "Top 500 Chinese Companies" released by Fortune China for three years in succession and was named in the Financial Times Global 500 in 2012. The company was chosen named in the BrandZ™ "Top 100 Most Valuable Chinese Brands" in 2014 and 2015 and ranked in third in the Brand Finance Spirits 50 in 2017. www.yangheglobal.com

Customer location

Suqian, Jiangsu China

Solution Provider Partner

ShangHai H-VISIONS Technology www.h-visions.com To implement the smart factory project, Yanghe replaced a scheduling process that had relied on spreadsheets with Opcenter APS software. Integrating the capabilities of the software with Yanghe's business processes, the project team developed rules for scheduling required materials and equipment while minimizing overall setup times for production. Yanghe also defined key performance indicators (KPIs) and their reporting requirements.

The implementation of Opcenter Execution Process at Yanghe delivered obvious improvements through the replacement of human operations with automated software control and through integrated devices and data, which collect production quantities and operation speeds of each process through automated instruments and equipment.

For quality inspection processes, Yanghe implemented Opcenter Laboratory capabilities for IQC inspection, barcode management, automatic scanning and OQC inspection to build a quality information collection system and a quality management platform, realizing quality traceability of the whole process from finished products and semi-finished products to raw materials.

The value of digitalization

Yanghe's smart factory digitalization project has delivered broad-ranging business benefits in a number of areas. Opcenter Scheduling helped the company automate scheduling and integrate the production schedule with its ERP system, its MES system Opcenter Execution Process and with its supplier relationship management (SRM) system. This enabled automated accounting of performance indicators such as capacity utilization, plan versus actual and on-time delivery. By standardizing operations, Yanghe has established uniform standards for equipment interfaces and automated data collection that has improved manufacturing processes. The production line process status is now visualized and prominently displayed in the production facility, providing real-time visibility and transparency of KPIs such as material loss and qualified rates.

Yanghe has also improved financial controls by automating and refining production cost accounting. Through detailed analysis of equipment failures, material, man-hours, quality and other losses using real-time product cost data, the company can easily determine material, manufacturing, and equipment costs and analyze them on a year-to-year basis and report them at the business unit and order levels.

From a quality perspective, Yanghe can now trace quality data in a single query, from packaging materials to semi-finished products, from bulk liquor to finished product. The standardized quality business process, combined with the barcode technology applied to supplier materials, enables Yanghe to manage in detail material purchase, inspection and storage, issue of materials to production, and production losses. The quality standardization intelligently distributes inspection and automates second sampling inspection and other quality processes to maintain high quality.

Yanghe's smart factory project has also leveraged Opcenter solutions to integrate planning, purchasing, supplier and production information to coordinate the supply chain. The company has applied digital and cloud computing technology to build an integrated platform for production, supply and marketing to go beyond automated production to real intelligent manufacturing.

Siemens Digital Industries Software

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