

# Significant savings through LIMS use at Sinopec Guangzhou

China Petrochemical Corporation, the sole initiator of Sinopec, is a super-large petroleum and petrochemical group restructured and established on the basis of the former China Petrochemical Corporation. It is a state-owned company, functioning as an investment institution in which the State holds the controlling share.

## Profile

Sinopec is an integrated energy and chemical company. The scope of its business is in five areas: (1) oil and gas exploration; (2) oil refining; (3) production of petrochemicals, chemical fibers, chemical fertilizers and other chemical products; (4) storage and pipeline transportation of crude oil and natural gas; and (5) import and export of crude oil, natural gas, refined oil products, chemicals, and other commodities. Sinopec is China's largest producer and supplier of oil products (including gasoline, diesel and jet fuel, etc.) and petrochemical products (including intermediates, synthetic resin, synthetic fiber monomers and polymers, synthetic fiber and chemical fertilizer). It is also the second largest crude oil producer.

## Business challenge

As one of China's leading petrochemical conglomerates, Sinopec has taken advantage of the industry's business cycle while making efforts to overcome sometimes adversarial factors, such as increasing costs due to the significant upswing of crude oil prices in the global market. It has been their continuing mission to apply all types of effective methods to reduce energy consumption, optimize resources, increase production volumes, maximize sales, improve profitability and enhance their competitive edge.



To meet its reporting needs, Sinopec had developed a simple daily logging system at the oil refining laboratory which could enable reports to be entered and produced. Apart from that system, transactions had been conducted largely through manual means, including the collecting of data, the entering of raw records, the writing of report papers and the transferring of report papers between facilities. However, with the continuous expansion of business, this simple system was unable to meet the needs of Sinopec's complex and fast-paced production. Consequently, the organization talked to Thermo Fisher Scientific in the hope of using a Laboratory Information Management System (LIMS) to automate the collection of data from instruments and transmission of report papers between different sites for better communication and decision making.

## Requirements

A team of engineers from Thermo Fisher Scientific and their local partner, Beijing Huachuang Zhongshi Science & Technology Co., Ltd., visited Sinopec to conduct a thorough discussion and research on the specific situations facing the organization. Sinopec Guangzhou had already deployed Thermo Scientific™ SampleManager LIMS™ software at 4 large laboratories, including 3 oil refining laboratories and 1 chemical laboratory. Through communications and studies, it was determined that Sinopec Guangzhou's laboratories would require the LIMS to achieve the following functions:

- Analyze the quality of crude oil
- Enter and produce sample results
- Search for results
- Manage the production operation
- Transfer and share laboratory data between different sites

## Solution

As one of Sinopec's 5 pilot subsidiaries, Sinopec's Guangzhou branch was among the first companies that introduced and applied applied SampleManager LIMS software. People from Sinopec's Guangzhou Quality Inspection Center, Sinopec Guangzhou Information Center and engineers from Thermo Fisher and Huachuang came together to develop a task force that worked with great enthusiasm and expertise.

Ever since the system was deployed, engineers from Huachuang and people from Sinopec Guangzhou's laboratories had been working together to discuss how to implement the LIMS system to best meet the particular needs of the company.

Training on SampleManager LIMS software rolled out simultaneously. The laboratory workers within the organization were put in contact with the product from the early stage in order to ensure that they kept up their knowledge about and experience with the system. In addition, their dedication and commitment were also a critical factor which contributed to the successful operation of the system.

The engineers from Huachuang were engaged in the operational work in relation to the implementation and certification of the system. Officers at Sinopec's Quality Inspection Center and Information Center expressed their highly positive opinions and recognition of Huachuang engineers' professional commitment and their ability to solve problems on time.

## Business benefits

Since the deployment of SampleManager LIMS software, Sinopec Guangzhou has been quite satisfied with the implementation, since its objectives have been achieved and its functionality has met the initial expectations. Moreover, through the deployment of SampleManager LIMS software, Sinopec Guangzhou has saved significant costs in human resources and time. 80% of its manual record keeping has been eliminated since data can now be collected automatically from instruments, and there is no need for operators to write records manually in notebooks or ride bicycles to deliver report papers from one facility to another. Laboratory workers at different sites can now share data in real time, which helps them save huge amounts of paper that in the past was used to print reports for laboratories every day.

With SampleManager LIMS software, the Quality Inspection Center is now able to have real-time data monitoring, so that system operators can stay alert to data variations. Once any irregularities are spotted, they can take immediate actions to probe for possible causes as well as focus on relevant procedures and laboratory results. In addition, in the event a problem occurs in the oil production process, relevant data can also be retrieved from the LIMS for further examination or to provide guidance for production through data analysis.

In summary, here are the main benefits of the SampleManager LIMS software installation:

- Dramatic savings in personnel time and labor
- Reduction in errors due to manual data entry
- Ability to share data across multiple sites
- Automatic collection of data samples
- Automatic sample results collection
- Ability to search for results

Information technology is widely applied in Sinopec Guangzhou's Refinery Unit to optimize resource allocation, improve production schemes and control conditions for process operations. The installation of SampleManager LIMS software has helped improve laboratory automation and the utilization of testing instruments, ensure smooth operation of devices and enhance economic returns.

## Future plans

With a documented history of cooperation and effective results from the installation of the LIMS, Sinopec Guangzhou has signed a contract with Huachuang for the second phase of system development. For this project, SampleManager LIMS software will integrate with Sinopec Guangzhou's Manufacturing Execution System (MES) system.

The development of the MES system has provided the company with an integrated platform for production management, so the productivity of relevant people and the precision of the company's management initiatives can be expected to improve. The implementation of the production and business scheduling system has also enhanced the predictability of production and the precision in production planning.

## Partnering with Thermo Fisher Scientific

Thermo Fisher Scientific is the worldwide leader in laboratory software and services, providing enterprise-wide, multi-laboratory solutions that are relied on at the leading companies in petrochemical, chemical, food and beverage, pharmaceutical, forensics and many more. To support our installations, we provide implementation, validation, training, maintenance and support from the industry's largest worldwide informatics services network.

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