

Oil Logistics with B&R

The high demand for oil in all parts of the world has made reliable oil production and logistics an essential issue, particularly in China. Production plants, oil transport and refineries work 24 hours a day. A failure of any element in the supply chain limits availability of the end product, thereby causing a further increase in oil prices.



Quality of a functioning production chain is an important part of the strategy at Sinopec Zhenai Refining & Chemical Company. Sinopec is one of the largest companies in China's energy sector and is primarily involved in the production and sale of oil products such as gasoline, diesel, kerosene and liquid gas. The company owns the largest refinery in China, which utilizes state-of-the-art technology.

Partner in automation

An oil harbor is operated in Ningbo with a capacity of 30 million tons per year. In order to maintain safe and reliable operation of production logistics, the China National Automation Control System Corp. was commissioned, as system integrator, to fully automate the plant. With nearly 300 employees, National Automation specializes in the automation of oil tank and oil production systems. Over the years, the employees have acquired a high degree of expertise and process know-how. In addition to their headquarters in Beijing, the system integrator also has five other offices in China.

National Automation has implemented B&R products in the automation of the harbor plant. What processes must the controllers master in this system?

The main task is the recording and collection of field data. Physical parameters such as oil levels, oil flow, a variety of temperature measurements, etc. are obtained by the field instruments and passed on to the controller. The versatile, freely-configurable interfaces in the B&R controllers are fully utilized to accomplish these tasks. The B&R controllers can understand and process virtually all types of bus communication whether serial, Ethernet, CAN, etc. In addition to reliability, National Automation sees this high degree of flexibility as the main argument for using the B&R controllers.

Job scheduling makes up another significant task. This involves the planning and processing of all existing tasks. The necessary tank capacity and the corresponding tank is selected according to the quantity that should be transported with the ship. The plant's pipe system must then be activated in order to load the ship accordingly. The tank must be refilled as quickly as possible. This is all accomplished using the algorithms developed by National Automation.

These processes are overlaid by the automatic production system. This system operates all of the underlying system units, which allows the entire plant to run fully automatically without a single operator or other monitoring personnel.



Systematic display of information

Another interesting characteristic that is quite useful for the plant operator is the integrated expert system. Plant states and alarms are collected and fed to an expert system. The expert system outputs necessary instructions in the form of messages for the operating personnel to help operate the plant safely and reliably. Furthermore, GSM/CDMA technology is used for remote maintenance. This makes it possible to transfer the main plant alarms directly to a mobile phone.

The use of B&R controllers has led to an increase in reliability and, therefore, increased output.

National Automation is convinced that future collaboration opportunities will arise in many areas thanks to the innovative products from B&R as well as APROL in the Chinese language. 

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complete solution!**