

Guizhou Crystal Chemical Company realizes higher productivity targets with ABB's Industrial^{IT}

The demand to improve productivity while increasing plant efficiency leads Guizhou Crystal Chemical to modernize two of its plants in China with ABB's proven and reliable Industrial IT technology. Ex-proofed I/O technology supersedes to use costly barriers, which positively influences the project balance money wise. Redundant system design and national language support for the operator interface eases increase system availability and usability.

Guizhou Crystal Chemical, one of the top 100 businesses in China's southern Guizhou province, produces a large variety of chemical products. Some examples are polyvinyl acetate (PVA) emulsions (products used for example in paint emulsions), acetic anhydride, polyvinyl alcohol (VAC), calcium carbide, glacial acetic acid, woodblock adhesive, acetates, carbonized bricks, and chemical paper binders.

The company has ambitious plans for growth, thus aiming to triple its production capacity and sales. This results in continued efforts to modernize the production & organization through applying new technology. So the company decided in 2001 to upgrade the production system in two of its plants out of the total number of 13. The site is located the Hongfeng lake, in a western suburb of Guiyang city (capital of Guizhou province).



Fig. 2: S900



Fig. 1: Plant Entrance

Ambitious goals

The VAC and the PVA plant are critical to Guizhou Crystal's success. Both the plants were running using older traditional instruments, single loop controllers panel-mounted recorders, and a variety of instruments from global and local suppliers. Increasing productivity and improving operations' efficiency were the major purpose of the modernization project. This requires using the best available new technology in redundant and reliable configurations, and equipment, which may work in Explosive zones. As third, the workforce should be trained in applying modern technology.

Mr. Yao, Chairman & President of Guizhou Crystal Chemical Group, Guizhou province, summarized the needs: "We needed to improve our productivity, and our efficiency. ABB's Industrial IT gives us the technological edge to achieve our goals for higher productivity, future expansion possibilities, development of our employees through new technology, and to become a competitive world-class supplier when China enters the WTO".

ABB's reputation as a reliable supplier of leading-edge technology and service at a favorable price convinced them to work with this global supplier. The cooperation and the Industrial IT from ABB fruits in competitive and technological advantage they were looking for.



Fig. 3: Mr. Yao, Chairman & President of Guizhou Crystal Chemical Group

Industrial IT to qualify for benefits

Two sets of redundant Control IT AC800F controllers supervise and manage more than 1500 I/O points of the two plants. 4 Operator stations, which are installed in two separate control rooms, accommodate plant personal with the right views to the process. The operator interface on-hand in local language - Mandarin Chinese – eases the operator job to adapt to the new technology offered in the control system.

The plant network itself runs on Ethernet TCP/IP, and also interconnects additionally two 2 supervisory stations installed in the company's production office.

Profibus DP V1 technology is used to connect the controllers to the S800 and S900 remote I/O stations. The already existing traditional instruments integrate while using remote connection.

The I/O equipment available in Ex-proof technology thus eliminating use extra (costly) barriers brought Brownie points to ABB's solution. Guizhou Crystal decided on redundant configuration of the S900 I/O.

Modern, Flexible control system

The AC800F Controllers, which run on RISC based processors, allows running tasks at different operating cycles. Therefore, each task can be individually programmed and set at a different operating speed, priority or cycle time. As a result, the controller can run both complex control tasks as well as fast switching tasks down to 5ms. System program language is standard IEC61131-3, the accepted standard in programming control applications.

Engineering Efficiency

The system variables and tag values from the different process segments are shared across the system by the controllers and the operator stations. This means that there are no consistency problems throughout the system and engineering and commissioning as well as plant operation becomes child's play.

The software environment therefore provides efficiency in the engineering and commissioning of a project and Guizhou Crystal was able to complete engineering and commissioning of the project within 2 months. The plant has been running again successfully since July 2002 using the Industrial^{IT} solution provided by ABB. ABB provided the Engineering capability with resources from an ABB System Integrator, Beijing Strong Company.

Summary

ABB's Industrial IT solutions deliver production efficiency using latest technology combined with user-friendly functions like local language options and easy-to-use engineering tools. The use of Fieldbus and Ex-proof modern technology saves cost and increases reliability.