

Shenhua Group Lowers Costs and Improves Process Optimization with Experion Batch Manager



“We are very impressed with Honeywell’s Experion Batch Manager solution. We received outstanding support from Honeywell’s Global Engineering Services team in China and we were able to meet project schedules and achieve operating excellence.”

Mr. Zhang Heping, Chief I&E Engineer, Shenhua Engineering Group

Benefits

The largest coal company in the world, the Shenhua Group Corporation, is developing coal-to-liquid and coal-to-chemicals plants worth US \$10 billion. Shenhua selected Honeywell to carry out a coal liquefaction project and requested that the pressure swing absorption (PSA) be implemented in Honeywell’s Experion® Process Knowledge System (PKS). This was a critical challenge to both Honeywell and Shenhua’s project teams and many expressed concerns that Experion could not handle the complex PSA logic. However, with Experion Batch Manager and the exceptional support from Honeywell’s Global Engineering Services in China, Shenhua was able to see PSA fully functioning in the Experion system and fulfilling all technical specifications perfectly.

Other benefits achieved with this batch solution included:

- Upgraded plant to international batch standard ISA88, enabling Shenhua to make full use of the standard
- Removed engineering and maintenance costs on third-party PSA devices
- Easy to maintain, flexible to modify and convenient for process optimization
- Able to achieve operating excellence with Abnormal Situation Management methodology
- Embedded advanced control scheme improved control loop performance



Honeywell’s Experion Batch Manager helps Shenhua lower costs and optimize performance with a solution for PSA control.

Background

Shenhua Group Corporation Limited is a diversified energy enterprise concentrating on coal production, sales, electricity and thermal generation, coal liquefaction and coal chemicals, and railway and port transportation. Pursuing a multi-faceted strategy, the company has integrated segments of coal, railway, power and ports. Shenhua has 54 company-owned coal mines with a total capacity of 200 million tons, 1,369 kilometers of railways with a total transportation capacity of 128 million tons/kilometer, and numerous power plants with a total installed capacity of 16080 MW.

As the largest coal provider in the world, Shenhua focuses on safety, quality, efficiency, technology, innovation and resource preservation, and is the leading corporation in China's work safety standards.

Challenge

Shenhua wanted to integrate PSA technology into its current process control systems. PSA technology is an important aspect of the plant as it purifies biogas extracted from coal processing and increases the amount of methane and other hydrocarbon contents, thereby upgrading its products to the quality of natural gases.

The project team was tasked to find a way of accelerating delivery and reducing risk. Whatever process control solution was chosen had to be able to handle the intricate PSA logic. The plant has two units of multiple columns, and its process consists of multiple phases running in different cycles and sub-steps. All columns must follow certain sequential steps in precise timing. Columns that malfunction will be switched off in predesigned procedures, and this makes PSA logic highly interactive and complex.

Another concern was valve synchronization. Valve actions are crucial in preventing gas leakage during column pressurization. Leaking gas disrupts the operation, lowering the quality of the product. Since many programs are running, synchronizing these programs to ensure proper valve actions is not convenient.

Solution

Experion Batch Manager was selected as the best and most efficient solution to meet Shenhua's needs. Developed by Honeywell for batch processes, Experion Batch Manager is fully integrated with Experion C300 and ACE controllers, running batch processes in a faster and more reliable manner than other batch solutions on the market.

More Information

For more information on Experion Batch Manager, visit www.honeywell.com/ps or contact your Honeywell account manager.

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Shenhua found that Experion Batch Manager is best equipped in dealing with PSA. Experion Batch Manager is compatible with ISA88 and provides all components needed. Modeling the process in the ISA88 standard greatly simplifies the complexity of PSA logic. "With the help of Experion Batch Manager, PSA programming is not only feasible but more effective," said Zhang Heping, Shenhua Project Lead.

Experion Batch Manager's layered structure facilitates single high-level components to control multiple low-level components. By layering the programs and then assigning them to different levels properly, synchronization of programs and valve actions are achieved.

"We are convinced that Experion is well suited for PSA," said Mr. Chen, director of the PSA process control department at Shenhua. "Even though I was initially skeptical of the feasibility of the Experion solution, this success has convinced us. We will send more people to work with Honeywell to learn about Experion Batch Manager. We expect more business in this area."

Honeywell's Global Engineering Services, which has successfully accomplished its first PSA project for Shenhua, is working on a second PSA project for the Tianjin soda plant. It is developing QA procedures in PSA project management and engineering. Future PSA projects are expected to have a faster cycle time and be of higher quality.

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