

## Sinopec Saves More Than \$1 Million in Energy Costs with Honeywell’s Advanced Energy Solutions



“By working with Honeywell, we found the proven technology, reputation, excellent people and service to increase our boiler operation range, reduce fuel gas emissions and optimize our production. Thanks to this revolutionary advanced energy solution, we have also reaped enormous cost savings.”

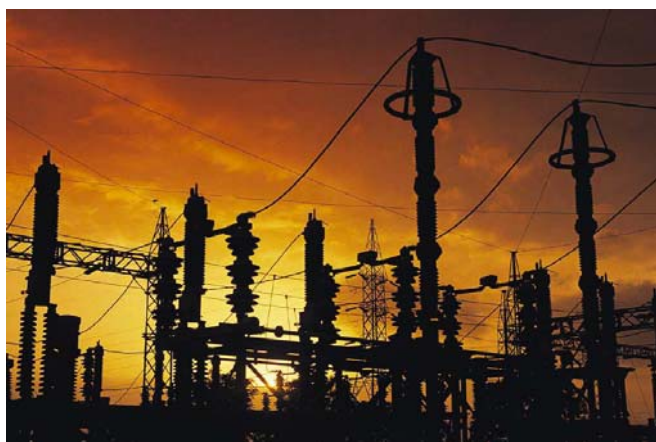
Zhao Weijie, Vice Chief Engineer, Sinopec Shanghai Petrochemical Thermal Power Plant, China

### Benefits

Industrial power plants have to maintain a balance between generation demands, operational efficiencies and regulatory constraints. In addition, these plants need a solution that can bring advanced control and optimization to industrial power generators, process steam and heat producers to help reduce energy costs and lower greenhouse gas emissions. The Sinopec Shanghai Petrochemical Co. Ltd. needed a solution to help with control issues at its power plant in Shanghai and a way to help reduce costs and lower emissions.

Sinopec selected Honeywell to help increase electricity generation while curbing coal consumption at its Shanghai power plant. Since implementing Honeywell’s Advanced Energy Solutions, a suite of advanced control software applications designed specifically for the power generation industry, Sinopec has seen the following benefits:

- Achieved an estimated \$1 million in savings on the supply of energy to the refinery
- Increased boiler efficiency by 0.48 percent
- Increased operating steam temperature by 2.8°C
- Improved stability of key combustion process variables
- Reduced air pollutant emissions from fuel and limestone consumption to comply with environmental standards
- Optimized production capacity utilization
- Optimized transient states control
- Extended production asset life
- Reduced maintenance
- Expected consumption of standard coal to drop by more than 500 tons and coke by 1,700 tons annually



Honeywell’s Advanced Energy Solutions helped reduce energy costs at Sinopec’s power plant in Shanghai.

### Background

Located in the Jinshan District of Shanghai, Sinopec Shanghai Petrochemical Co. Ltd. is one of the largest modern petrochemical enterprises in China with highly integrated production and operations of petroleum products, petrochemicals, synthetic fibers and plastics. Sinopec is an important base to develop a modern petrochemical industry in China. By the end of 2006, Sinopec had total assets of RMB 27.6 billion and 22,900 staff members.

Sinopec has 69 main production plants including oil refining, petrochemical processing and manufacturing of plastics and synthetic fibers. The company produces over 60 different types of products with distribution across China and several other countries.

Sinopec has its own utilities to supply water, electricity, steam and gas, its own environmental protection system, and transportation facilities to operate 14 millions tons of one-time crude oil processing capacity, 950,000 tons of ethylene production capacity, 5.1 million tons of petroleum product and petrochemical production capacity, 950,000 tons of synthetic resin and plastics production capacity, and 1.38 million tons of synthetic fiber raw material and production capacity.

### Challenge

Reducing overall energy costs is critical to staying competitive. Industrial power and cogeneration plants must reduce costs while maintaining adequate energy supply to the industrial manufacturing processes they feed. Sinopec needed a solution to help with control issues at its power plant in Shanghai and a way to help reduce costs and lower greenhouse gas emissions.

"Our control issues at the Sinopec power plant could not be solved by traditional PID control loops and we were looking for a new technology that would improve our boiler's efficiency while at the same time cut down the emissions," said Zhao Weijie, Chief Engineer, Sinopec Shanghai Petrochemical Company, China. "We selected Honeywell for a variety of reasons including their superior technology and first-to-market solution based on decades of sound power generation experience. Another major decision-making attribute was Honeywell's indisputable reputation and excellent customer service."

### Solution

Sinopec selected Honeywell's Advanced Energy Solutions to help improve the plant's boiler efficiency while lowering energy costs and reducing greenhouse gas emissions.

Advanced Energy Solutions is a suite of process control, monitoring and optimization applications designed specifically for industrial power generation facilities. By implementing

Advanced Energy Solutions, industrial power generation facilities will benefit from reduced heat rate and power production costs, reduced greenhouse gas emissions, optimized production capacity utilization, extended production asset life and reduced maintenance. The solution can also be fully integrated with Honeywell's Experion® Process Knowledge System (PKS) or third-party control system, and includes various modules that can be implemented as standalone components or as a fully integrated solution.

Using Advanced Energy Solutions Sinopec's Shanghai power plant improved the efficiency of its circulating fluidized bed (CFB) combustion process. The process uses crushed coal mixed with limestone that is heated up to 900°C to generate low-cost electricity with very low emissions. The Honeywell solution helped to increase process efficiency by developing a closed-loop advanced control strategy to optimize the combustion performance for the CFB boilers while simultaneously ensuring environmental regulations were met.

"As the first company in the world to apply advanced control application technology to CFB units, Sinopec significantly enhanced the effectiveness and control performance of the distributed control system at the CFB boiler level and for the entire plant," said Zhao. "Even more impressive, all improvements were achieved by implementing software rather than executing a major hardware refurbishment at the plant. We have also to date achieved an estimated \$1 million of savings on the supply of energy to our refinery."

Sinopec is very satisfied with its investment and the ability to reduce its energy footprint and overall costs. "The support and enthusiasm we received from Honeywell engineers, R&D and customer service did not go unnoticed and helped make this project a success. We relied on the close collaboration and trust between our two companies and look forward to continuing similar projects in the future," said Zhao.

### More Information

For more information on Honeywell's Advanced Energy Solutions, visit [www.honeywell.com/ps](http://www.honeywell.com/ps) or contact your Honeywell account manager.

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