OSIsoft®

BLUESTAR

To stay ahead of its competition, China National Bluestar (Group) Co., Ltd. constantly works to optimize production and increase energy efficiency. To better understand what was happening across its 12 plants (which are spread across 9 provinces), China National Bluestar turned to the OSIsoft PI System™. With improved performance monitoring and computing power, China National Bluestar is boosting production, increasing efficiency and minimizing costs.

"The PI System provides visibility at the management level and transparency around problems."

– Dr. Yuelong Su, Senior Engineer, China National Bluestar

Situation

China National Bluestar manufactures chemical materials and animal nutritional additives. To improve operations and maximize profits, the company is committed to ongoing efficiency improvement in its manufacturing operation — that means increasing production while reducing energy and material costs. However, managers at the company's headquarters in Beijing lacked real-time access to on-site data for corporate wide reporting and planning, which hampered their efforts to quickly identify problems and deploy best practices across sites.

For example, in order to produce company-wide monthly financial statements, Bluestar needs to track chemical inventory across all 12 facilities. This required collecting that data from each of its operational sites, before aggregating that data at central headquarters. Chemical inventory can be challenging to measure, since chemical weights vary due to environmental conditions. The various data about tank conditions and chemical weight were collected manually before calculations could be made to identify actual inventory.

That data was then reported to management. The process was slow, and managers couldn't use the data to make supply chain and distribution decisions because of the data lag.

Senior chemical engineers at Bluestar's headquarters were responsible for making improvements to the complex chemical reactions and industrial processes at its plants. But without careful planning, even a minor adjustment to an operation has the potential to damage product quality or cause dangerous reactions. Therefore, engineers need to carefully plan, model and analyze proposed changes before they run on a live system, using historical data and predictive modeling. During a live test, the process must be monitored closely, in real-time, to prevent accidents. Without the proper tools to do so, it was often too dangerous or costly to alter production methods. That limited the company's ability to reduce costs or improve output.

Solution

To gain visibility into its distributed operations and to improve production efficiency, Bluestar has deployed the PI System at its 12 facilities across China. A PI to PI Interface makes data accessible at the Beijing headquarters. "The PI System provides visibility at the management level and transparency around problems," says Dr. Su, Senior Engineer at Bluestar.

PI Asset Framework™ (PI AF) standardizes reporting from each site, making it easy for managers to monitor and compare performance across sites. Bluestar is also using PI System tools to analyze and test its production methods. Using many of the advanced calculation tools available in the PI System, Bluestar managers are able to track, in real-time, calculated data such as inventory levels. On-site engineers and the Center of Excellence have developed numerous soft-sensing models and applications using PI System tools.

CHEMICALS & PETROCHEMICALS

Bluestar also implemented PI SQC™ to assist with overall equipment effectiveness analysis, control method simulation, statistical quality control and implementing six-sigma improvements.

PI System in PBT and BPA Control Room

Benefits

The PI System gives Bluestar better visibility into its operations at the individual plant level and across its operations. "Without the PI System, our managers at headquarters didn't know what was happening inside the plants," Dr. Su says. "Now in the level of equipment operations know everything they want."

In the case of inventory tracking, Dr. Su says that before the PI System was installed, plant-level operators "would check temperature and tank level, then go back to the office and use an equation to compute the materials weight in that tank," said Dr. Su. Now, calculations of actual material inventory are done dynamically, using data automatically captured from each tank.

That provides real-time access to the central office, which can see data at any resolution it needs — from the individual tank to companywide. Managers can now easily see individual site data and how it fits into the big picture of company operations, generate more accurate financial statements and make better-informed decisions. The time to generate reports has been reduced by 90%, boosting labor productivity at its plants.

The PI System is also helping Bluestar make changes to its production methods to maximize efficiency and increase profits. "The PI System lets us test our ideas and our optimization methods," said Dr. Su. "We can make a software model and test that first, before running it on the DCS." Bluestar has been able to optimize more than 30 production units with models based on real-time and historical data. With one optimization, at one site, Bluestar saved $200,000 a year in steam costs by decreasing the temperature during a critical operation.

With the PI System in place, headquarters now has direct access to the sites' data and the sites have better visibility into overall operations – which helps everyone continuously optimize production and increase energy efficiency.

Customer Business Challenge

- Beijing headquarters had limited visibility into its 12 plants which are located across 9 provinces.
- Operational data was collected manually from limited hardware sensors.
- Optimizing production processes requires complex computations and rigorous testing.

Solution

- The PI to PI Interface makes data from the plants visible at headquarters.
- The PI System collects readings automatically and computes soft-sensing metrics.
- The PI System tools model process adjustments and help optimize performance.

Customer Results

- Headquarters has much-needed visibility into plant operations.
- Increased automation has improved reporting, making it faster and more accurate.
- More than 30 production units have been optimized. With one optimization, Bluestar is saving $200,000/year in steam costs at one site.