FOOD & BEVERAGE

Emerson's Digital Automation Improves Efficiency of New Bunge Rapeseed Oil Processing Plant in Poland

RESULTS

- Increased throughput by 10%
- Reduced maintenance costs by 50%
- Energy usage reduced by 1300GJ a month, €77,000 a year on one heat exchanger
- Use of bleaching earth reduced by 25%

APPLICATION

Full automation of a new rapeseed oil processing plant

CUSTOMER

ZT Kruszwica - Kruszwica, Poland

A subsidiary of Bunge - the world's largest producer of oilseed and bottled vegetable oils, ZT Kruswica is Poland's leading processor of oilseeds and manufacturer of vegetable oils.

CHALLENGE

To reinforce ZT Kruzswica's leading position in the vegetable fat market, a new highly efficient and economical rapeseed oil processing plant was built at Kruzswica in Poland. It was designed to replace an outdated unit located nearby. ZT Kruszwica wanted to streamline operating costs and implement a solution that would optimise process parameters, thereby reducing energy and utilities usage. The company was also looking for a solution that would combine tight, accurate process control with outstanding traceability. To meet these stipulations, a fully automated plant was required, supported by a plant architecture that applied open communications standards, linking the large number of monitoring and control devices, systems, and applications in a plant wide network.

For more information:
www.EmersonProcess.com/FoodAndBeverage

"Crucial to the selection of the PlantWeb architecture was our conviction that it would deliver greater efficiency than PLC based systems. When it became apparent that every single process across the plant could be controlled and configured from a single engineering station, it was an easy choice."

Jacek Brauer
Plant Automation Specialist/Automation Project Team Leader
ZT Kruszwica

EMERSON
Process Management

SOLUTION

ZT Kruszwica selected an automation solution based on Emerson's PlantWeb® digital plant architecture with a DeltaV™ digital automation system. HART® communications were used to network Emerson's intelligent devices throughout the plant, including over 100 Baumann™ and Fisher valves and over 950 ON-OFF valves fitted with Emerson's El-O-Matic® actuators.

The PlantWeb architecture has provided access to additional measurement data making it possible to identify and address bottlenecks in the process, and improve output. Since start-up, throughput has increased by 10 percent as a result of improving production processes.

By providing easy access to trend data, the DeltaV system makes it easy to spot deviations from optimum operating parameters. Using this information, ZT Kruszwica has modified and improved the algorithms run by the DeltaV system to reduce variability and optimise the process. As a result they have been able to run the plant closer to maximum capacity without compromising end product quality.

The automation solution has removed the need to monitor devices manually, and new procedures have been put in place to address problems quickly and efficiently. This and high quality measurement and control devices from Emerson, requiring less servicing, have reduced total maintenance costs by 50 percent compared with the previous plant.

Additional instruments showed that one of the heat exchangers was only 50 percent efficient. DeltaV programming improved this to 90 percent, which reduced energy usage by 1300GJ a month, amounting to EURO 77,000 a year. As a result of constantly improving the programmes run by the DeltaV system there has been a significant reduction in the amount of raw materials and utilities used; hexane consumption and the use of bleaching earth have been reduced by 25 percent.

AMS® Suite predictive maintenance software was used to ensure devices were installed and configured correctly accelerating commissioning and start up. AMS Suite is now used to check and recalibrate level devices, identify flow meter sensor errors, and monitor the health of critical devices, especially those in hazardous areas.

"Using the DeltaV system we are able to quickly identify if there are any problems with individual machines such as pumps. We do not have time to monitor all the devices individually, but we can look at measurement data trends to identify and rectify faults immediately."