



DeltaV Product Information CD

SUCCESS STORIES

PlantWeb puts the fizz in American Soda

At American Soda, L.L.P., Inc. of Parachute, Colo., business is bubbling -- literally. That's partly because of innovations developed in the company's commercial solution-mining research operation. Starting in late 2000, American Soda will be using these advances to mine nahcolite, a raw form of sodium bicarbonate. The nahcolite is used to make both baking soda, a refined form of sodium bicarbonate, and soda ash, or sodium carbonate.

American Soda's goal isn't to be just another supplier. The company plans to be the world's lowest-cost provider of both materials in selected markets. This will be accomplished thanks to improvements in both techniques and technologies. Included in the technology improvements are a scalable primary control system and FOUNDATION fieldbus devices that work together as part of a PlantWeb field-based architecture.

So far, results from American Soda's research mining facility in the Piceance Creek Basin in western Colorado have been encouraging.

"New automation technologies have proven very effective and will allow American Soda to produce soda ash and sodium bicarbonate with far fewer employees than other United States producers," said Mike Huffman, American Soda senior systems engineer.

The research facility mines nahcolite by injecting hot water into a nahcolite-rich oil shale deposit at a depth of 1,600 to 2,200 feet. The saturated brine returns to the surface for processing and analysis. Thanks to the temperatures and pressures involved, the highly concentrated nahcolite brine has tested almost entirely free of impurities and petroleum products. That makes the American Soda approach more cost competitive than alternative methods.

The company intends to use the same process to solution mine 1.6 million tons of nahcolite annually to produce one million tons of soda ash and 150,000 tons of sodium bicarbonate. Scheduled to begin operation in late 2000, there will be two plant sites located 44 miles apart and connected by pipelines. One site will solution mine the nahcolite, while the second will produce the soda ash and sodium bicarbonate. Doing so requires tight process control and monitoring, both for commercial and regulatory reasons.

The process automation solution selected for the commercial plant and presently running the research facility uses PlantWeb field-based architecture from Fisher-Rosemount. The architecture proved ideal because its power and capabilities exceed those of traditional solutions based on a conventional distributed control system (DCS). The compact and substantially more cost effective PlantWeb package offers a high degree of distributed intelligence and extensive data collection, as well as remote diagnostics, calibration, and maintenance capabilities. The flexibility of PlantWeb proved important during the research phase of the project, such as when an entirely new process was installed.

"Expanding and reconfiguring the control system for the new process was accomplished in only a few weeks -- and by American Soda personnel," recalled Huffman. "This wouldn't have been possible with a conventional DCS. I did much of the configuration myself even though I have limited programming knowledge."

To gain experience with fieldbus, American Soda installed a DeltaV automation system and nine FOUNDATION fieldbus registered devices from Fisher-Rosemount to run one of the research facility's 100

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percent capacity heat exchangers plus a condensate level. The fieldbus instruments include temperature, pressure, and level transmitters, digital valve controllers, and Coriolis and magnetic flowmeters.

Since it was continuously operating, the heat exchanger provided a real-world test. It also allowed Huffman and his co-workers to test the technology by trying to induce failure by shorting and severing communications. The attempt to create a failure, however, was a failure. The fieldbus instruments continued to operate as last instructed.

Now nearing completion, the commercial plant will include two processing plants plus 26 wells spaced over a mile of rocky territory. The well field will rely exclusively on wired and fiber optic FOUNDATION fieldbus communications. Not only will this reduce cable runs, but devices can be diagnosed, maintained, calibrated, and tuned from a remote workstation. That can be vital when operating in less than ideal conditions, as Huffman pointed out.

"During the winter, the terrain here can be nearly impassable. We would also like to operate both the mining operations and the Upper Processing Plant with just two operators per shift. Remote wellfield servicing will certainly help in achieving that goal," he said.

So, thanks to its own ingenuity and that of its partners, American Soda is about to start cooking.

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