

Scalable Digital Automation System Integrates Multiple Processes in Elekeiroz' Plastic/Polyester Resin Plant

RESULTS

- 10%-20% installation savings
- Maintenance cost savings
- Increasing product quality
- Up to 5% increased throughput
- Increased batch formula reliability
- Increased process management control

APPLICATION

Batch and continuous applications make polyester resins, plastic coatings, and polymers. The complex, which totals nearly 7,000 I/O, includes the nation's only supply of maleic anhydride.

CUSTOMER

Elekeiroz, near Varzea Paulista, Brazil

CHALLENGE

The company wanted to incrementally upgrade the complex's five production areas, and end up with a single, integrated system across the diverse processes.

SOLUTION

Elekeiroz selected Emerson Process Management's DeltaV™ digital automation system to update its critical batch and continuous applications because the system's scalability allowed the company to incrementally upgrade the complex's five production areas, in an integrated system. Emerson's PlantWeb™ architecture, which includes smart field devices, communicating through fieldbus technologies to the DeltaV system, provided substantial installation and ongoing maintenance savings, while increasing product quality and throughput in all process areas.



“The high point of the installation for the resin unit is the reliability of the formulas. Since the resin unit works with a very large variety of products, each formula varies from one to the other. The reliability we added to the operation is essential. It's the most important aspect of the installation.”

Maria da Conceição Pinto
Executive Manager, Elekeiroz Resin Division



For more information:
www.EmersonProcess.com/DeltaV



Polyester Resins: Increased Batch Formula Reliability

Elekeiroz began by installing the DeltaV system in its polyester resins process, a batch process, and one of the most complex at Elekeiroz. Says electrical instrumentation coordinator Gilberto de Souza, “The schedule for the conversion was tight. But based on past experience, converting to any other system would have taken much longer.” The conversion, completed in three months, gave Elekeiroz tighter control of its batch process. Maria da Conceição Pinto, executive manager of Elekeiroz’ resin division, says, “The high point of the installation for the resin unit is the reliability of the formulas. Since the resin unit works with a very large variety of products, each formula varies from one to the other. The reliability we added to the operation is essential. It’s the most important aspect of the installation.”

Souza adds that the digital system’s embedded historian provided documentation that helped Elekeiroz certify the quality and consistency of its resin process and product for ISO 9001 compliance.

Plastic Coatings: More Volume, Uniformity, Security

With these improvements, Elekeiroz installed the new system to control its plastic coatings process, saving an estimated ten percent over traditional system installation. But more important, says plastic coatings production manager Eduardo Loschi, the gains included more consistent batches and better product quality in a process that had been largely manual. Loschi says more responsive control of process times, temperatures, pressures—in general, all the process parameters—resulted in increased production volume, more uniform quality and greater operational security.

Souza says the DeltaV system was easy to configure, noting that one of Elekeiroz’ instrument technicians did the whole configuration in the plastic coatings area before ever taking a formal training course.

Maleic Anhydride: Reduced Variability, Greater Throughput

With the second successful implementation, Elekeiroz continued to move forward, adding the digital automation system and field-based architecture for the expansion of its maleic anhydride plant. The fieldbus technology yielded a 20% savings in materials and labor for installation, commissioning and start-up.

The DeltaV system’s embedded diagnostics were particularly helpful in calibrating valve positioners during commissioning—and the historian’s trending has reduced ongoing maintenance costs by about 10%. Maleic anhydride process engineer Carlos Eduardo Luchini says one of the important things that the DeltaV provided for the process was the ease of loop tuning, using the system’s auto tune feature.

Luchini says the system provides data for better-defined management control “The reports we are generating not only contribute to improved



“The new system has made things easier. It decreased the processing time, and there was greater process security. From what we’ve seen so far, we have gained in productivity and reliability.”

Miriam Coretti S. Libs

Production Engineer, Elekeiroz



productivity, they are assisting management. The most outstanding are the logs. We are now implementing the quality system in the maleic plant for which the logs are an essential component.”

The DeltaV system helped decrease variability for an increase in productivity and process reliability. Adds production manager Carlos Alberto Samartini, “Today I am able to start up, stop and operate the maleic anhydride plant totally from the control room. This is a great labor-saving advantage.”

Phthalic Anhydride: Increased Volume; Reduced Labor

The next upgrade was in the phthalic anhydride plant, where Elekeiroz increased by 5% the production volume and reduced operational labor by 30%.

Jose Augusto Pimenta Neto, phthalic anhydride process engineer, says, “The startup of the phthalic unit—which concerned us very much because it is a very big plant with many locations—was very easy. Really, we had almost no problems.”

Formaldehyde: Decreased Batch Times, Centralized Control

Finally, with the addition of the digital automation system and field-based architecture to the formaldehyde plant, Elekeiroz completed the conversion of its entire complex. Formaldehyde processing time was reduced, with greater process security.

Says Pinto, “The reports, as well as the graphics, show what is happening throughout the process. We decreased the batch times with (the formaldehyde) improvement, with the formulas for each batch. The formula is in the system, which results in a timesaving.” Pinto goes on to say, “DeltaV centralized all the operations in the control room and we are now able to monitor the entire factory from one central location.”

Summing up the incremental automation updates, production engineer Miriam Coretti S. Liba says, “The new system has made things easier. It decreased the processing time, and there was greater process security. From what we’ve seen so far, we have gained in productivity and reliability.”

Adds Souza, “The experience at Elekeiroz with those start-ups resulted not only in saved time, but also with all of the capability and resources it has given us. The interaction between the instrumentation and operations has made our processes easier than they were with conventional instruments or with the system we used to have.”

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our software licensing agreement and terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of our product and services at any time without notice.

© 2011 Emerson Process Management. All rights reserved. The Emerson logo is a trademark and service mark of Emerson Electric Co.

For Emerson Process Management trademarks and service marks, go to www.EmersonProcess.com/home/news/resources/marks.pdf. All other marks are the property of their respective owners.



Emerson Process Management
12301 Research Blvd.
Research Park Plaza, Building III
Austin, TX 78759

www.EmersonProcess.com/DeltaV

