

Pharmaceutical Manufacturer Implements Cost-Effective Cure for Batch and Sequence Management with Rockwell Automation

Banks Integration Group implements PlantPAx™ process automation system for increased flexibility and quality

Solutions

PlantPAx process automation system

- The Rockwell Automation PlantPAx process automation system provides a unified solution for process, discrete and information
- Logix Batch & Sequence Manager delivers a controller-based batch solution
- EtherNet/IP network provides seamless communication throughout the facility

Intelligent Motor Control

- Allen-Bradley IntelliCENTER motor control center with Allen-Bradley PowerFlex drives offers precise control for critical pumps

System Design and Delivery

- Rockwell Automation Solution Provider, Banks Integration Group, designed and delivered the solution

Results

Improved Quality and Efficiency

- Replaced manual batch process to reduce risk of operator error and production delays
- Improved accuracy with intelligent motor control for critical pumps and agitators

Cost-Effective Solution

- Leveraged PlantPAx batch capabilities at no additional cost

New Business Opportunities

- Increased system flexibility to ease AFC's introduction of new products

Solution Provider



AMPAC Fine Chemicals is known for its leading-edge capabilities utilizing potentially hazardous, energetic chemistries for the production of high-potency APIs.

Background

When afflicted with a headache, stomachache or ache of any kind, taking medicine can often mean the difference between a productive day and miserable hours stuck in bed. While medications are often an easy fix to common ailments, those pills would be fairly useless without the active pharmaceutical ingredients (APIs) manufactured by companies like AMPAC Fine Chemicals (AFC), a subsidiary of American Pacific Corporation. AFC works with leading pharmaceutical companies to research, develop and manufacture the APIs found in many leading prescription medications that help save lives – and cure our aches.

Based in Rancho Cordova, Calif., AFCs' manufacturing facilities are designed to meet a wide range of needs. The company typically manages up to 15 development projects at any given time, producing small quantities of APIs for process expansion and trial testing of new drugs. As those drugs are tested and approved, AFC moves the manufacturing process to a semiwork scale facility. Here, engineers and product development experts can cost-effectively correct process kinks to reduce waste and increase throughput before full-scale production begins.

In fact, the company typically runs multiple full, commercial-scale products simultaneously, generating multiton quantities of APIs that are shipped in bulk to pharmaceutical companies around the globe. These pharmaceutical companies then incorporate the APIs into digestible form.

LISTEN.
THINK.
SOLVE.

Challenge

As one of North America's largest custom, small-molecule API manufacturers, AFC is known for its leading-edge capabilities utilizing potentially hazardous, energetic chemistries for the production of high-potency APIs. Despite its leadership in safety, quality, cost and innovation, the company faces stiff competition from overseas companies.

To increase its long-term competitiveness, AFC wanted to upgrade its single-product semiworks facility to a midscale production facility capable of producing a variety of products. Unfortunately, the existing control infrastructure was based on a hard-coded control system from the 1990s that limited AFC's ability to quickly and easily adjust programming and production – a requirement for the company as it moved the facility to multiproduct production.

As part of the plant upgrade, AFC wanted the facility to provide a new manufacturing capability: the production of regulated materials such as controlled substances. Doing so would require an updated process control system that could meet the regulatory requirements and increased security demands for production of such materials.

Solutions

To identify, engineer and install a flexible, cost-effective solution, AFC worked with its long-time automation partner Banks Integration Group, a Rockwell Automation Solution Provider.

"This wasn't an easy project," explained Mike Ryan, director of Automation Systems and Calibration, AFC. "Not only did we need a complete process control system upgrade, but we were also hoping to implement a flexible batch solution without increasing our project budget. We've worked with Banks Integration Group for years, and we knew they understood our plant and would work seamlessly with our team."

The team at Banks Integration Group, led by senior project engineer Neal Yates, determined that the PlantPAx™ process automation system from Rockwell Automation would be the ideal control solution for the project. The PlantPAx system is a scalable, open and unified process, discrete and information solution based on the Rockwell Automation Integrated Architecture™ platform. "AFC really needed a flexible control solution that offered easier system updates to accommodate their highly varied manufacturing schedule," said Yates. "Most AFC facilities have standardized on Rockwell Automation technology, so the PlantPAx system was really the ideal solution."

As Banks Integration Group began outlining the new system architecture, Yates attended the Process Solutions User Group (PSUG) at the annual Automation Fair® event, where he learned about a new solution that could be an ideal fit for the AFC facility migration. "The project was originally scoped only for the control equipment upgrade,



AFC required an updated process control system to meet regulatory requirements and increased security demands associated with controlled substances.

so there was no funding available for the addition of batch capabilities that Mike and his team were looking for," Yates explained. "When I heard about the PlantPAx Logix Batch & Sequence Manager during a PSUG session, I immediately thought it would be an ideal alternative to a traditional server-based batch solution. I knew we could integrate it without increasing the overall cost of the project."

The PlantPAx Logix Batch & Sequence Manager offers users a flexible, controller-based batch and sequencing solution that is independent of application servers and software. As a result, Yates and the Banks Integration Group team were able to deliver a flexible, controller-based solution without the need for costly, engineering-intensive custom code or additional server infrastructure associated with large-scale batch solutions. In addition, the AFC team can now configure recipes and formulas directly in the controller through FactoryTalk® View Site Edition software without requiring code changes to the system to help streamline the implementation of approved changes.

The entire PlantPAx system communicates via an EtherNet/IP™ network, using Allen-Bradley® FLEX™ I/O modules to interface with equipment throughout the AFC plant. As part of the project, Yates and his team also installed an Allen-Bradley IntelliCENTER® motor control center with Allen-Bradley PowerFlex® variable frequency drives to control the pumps and agitators used in the manufacturing process.

Results

With the new system, plant operators at AFC have reduced their use of manual, paper-based batch sheets for detailed processing instructions, thanks to an automated solution embedded directly into the control system. "Many of our production processes require a high level of detail – for

example, if we remove a kill solution that deactivates a volatile chemical too soon, it could significantly impact the entire process,” said Ryan.

“With the automated batch solution from Rockwell Automation, we’re improving the quality and consistency of our APIs, and avoiding the delays that naturally occur during manual operations.”

Working with a partner like Banks Integration Group helped the project come in on time and on budget, despite the midproject change of scope.

“The Rockwell Automation solution allows us to meet customer needs more quickly than our competitors, while still staying in full compliance with industry regulations,” said Ryan.

Echoes Yates, “Our understanding of Good Manufacturing Practices, combined with the standardized PlantPax Logix Batch & Sequence Manager solution, allows us to test each project to the same standards for simplified repeatability, which helps companies like AFC mitigate the risk associated with regulatory audits of their engineering efforts.”

The PlantPax system with Logix Batch & Sequence Manager also provides a simplified roadmap toward comprehensive FactoryTalk Batch software capabilities should AFC ever decide to implement that technology. Looking ahead, Ryan and the Banks Integration Group team are working with Rockwell Automation to identify additional upgrades in other plants that could provide similarly significant returns on investment for AFC.



With the PlantPax system, plant operators at AFC enjoy decreased reliance on manual, paper-based batch sheets, thanks to an automated solution embedded directly into the control system.

Indeed, the AFC team acknowledges that this project wouldn’t have happened without Banks Integration Group and its partnership with Rockwell Automation. “We were able to benefit from Neal’s access to high-level system expertise and advanced insight into the Rockwell Automation product line to identify cost-effective solutions that help us compete on a global scale,” explained Ryan. “We need to align ourselves with leading partner companies in order to be competitive and each project we complete with Banks Integration Group and Rockwell Automation is a perfect example of that strategy.”

The results mentioned above are specific to Banks Integration Group and AFC’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.



Rockwell Automation and PartnerNetwork companies collaborate to help you develop an ongoing approach to plant-wide optimization, improve your machine performance and achieve your sustainability objectives.

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Tighter control over manufacturing is mandatory for organizations looking to successfully compete in an evolving global marketplace. Banks Integration Group combines experience, teamwork, and value to create innovative automation and control solutions that provide deep visibility into the production process. Enhanced insight for managers, engineers, and operators leads to informed, intelligent decision making for continuous process improvement.

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