



# Reactor reaction

ABB batch management with 800xA comes to Colombia for the first time

RODRIGO VICTORIA – A marked shift in focus has been noted within the chemical industry, with the emphasis moving away from traditional supervisory batch management to production management. To help market players keep pace with this change, ABB has crafted System 800xA Batch Management: a comprehensive, ISA-88 compliant recipe management, batch and procedural control software package for configuring, scheduling, and managing batch operations to improve batch production profitability, consistency and traceability, while ensuring improved regulatory compliance, safety, and security.

non-food products, such as toothpaste, diet pills, water-based paints, detergents, eye drops and various paper products. It is used primarily because it has high viscosity, is non-toxic, and is hypoallergenic [1].

Due to the fact that this was the first batch project of its kind in Colombia, numerous technical issues had to be resolved before the system was stabilized. Amtex considered the system to be very expensive. However, with the solution reinforced by ABB's global expertise, particularly from the Latin American network including ABB Brazil and ABB Argentina, the channel partner and ABB Colombia, the customer was assured that they would have all the technical support needed to meet the demands of the project. As the first ever batch management project developed with ABB System 800xA in Colombia, the contract held particular significance for both ABB Colombia and the channel partner, Automatización S.A.



### The channel partner

Headquartered in the metropolitan area of Medellín, Colombia, Automatización S.A. carries out its activities throughout Colombia with offices in the cities of Bogotá, Cali and Cartagena. Founded in 1962, Automatización S.A. has a long history of successes in providing automation products and services to various industries in Colombia.

As the system integrator for this Amtex project, Automatización S.A. was in charge of designing the integration of the DCS system, as well as installation, calibration, commissioning and service.

### Scope and challenges

Five reactors were automated with the System 800xA control system. In 2010, Amtex realized it needed to automate a reactor at its functional polymers plant and operate under Batch standards. After reviewing tenders from various suppliers, through channel partner Automatización, Amtex selected ABB for its solution's technical advantages in both the control system and batch processing. Amtex's confidence in the contractor's technical knowledge and global support were critical factors in winning the contract.

The scope of the first contract was the automation of one reactor. However, a few months after the implementation on the first reactor, Amtex noted that the quality of the products, produced by the newly automated reactor, were markedly better than those from the remaining reactors. It therefore decided to expand

**S**ystem 800xA Batch Management enhances production management by featuring integrated production historian and production schedule interface for batch as well as procedural control applications in continuous and discrete processes. System 800xA Batch Management provides manufacturers the agility, speed, and control to respond to increasing production demands while reducing lifecycle costs and production downtime to enhance performance and overall competitiveness in the marketplace.

Amtex, the largest producer of Sodium Carboxymethylcellulose (CMC) in Latin America, originally looked to a supplier it was already familiar with for the project. However, due to the strong collaboration between ABB Colombia and Automatización S.A., the benefits of going with System 800xA Batch Management became apparent.

CMC is used in food science as a viscosity modifier or thickener, and to stabilize emulsions in various products including ice cream. As a food additive, it is known as E466. It is also a constituent of many

### About Amtex

In Latin America, Amtex is the largest producer of CMC under the brand name of Gelycel® → 1. It operates four production plants in Argentina, Colombia and Mexico, with sales offices and represen-

## The solution was reinforced by ABB's global expertise.

tatives in major cities in the American continent. With an installed capacity of 32,000 metric tons per year, Amtex is ranked among the world's most important producers of CMC, an anionic polymer derived from cellulose used as a thickener in many applications in the food, pharmaceuticals and oil industries. In Colombia Amtex has two facilities: one for the production of 15,000 tons per year of CMC and the other one for the production of 14,000 tons per year of Functional Polymers.

Amtex is also involved in manufacturing and providing technical assistance in the application of Gelycel, PAC, compounds and resins, as well as commercialization of raw materials.

#### Title picture

In Latin America, Amtex is the largest producer of CMC under the brand name of Gelycel®

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ABB’s automation to the other five reactors at the plant.

The system was implemented with redundancy at the controller, network control and AC800M Connectivity Server. The system has a Batch Server, Information Management Server, two operator workplaces, one engineering workplace and three controllers. The main controller also has five Profibus DP modules: one for each reactor to connect remote I/O modules, ABB drives and Profibus PA Instrumentation. The elements supplied were:

#### Batch server

The process operates a total of 50 equipment and two full production management clients. The System 800xA batch management complies with ISA S88 and allows the standardization of production control according to the requirements of customer orders.

#### Information management server

For the reporting process, Automatización implemented an Information Management Server that generates specific reports for raw materials, electrical consumption, steam and water utilization, batch production, process variables, alarms and events.

#### Connectivity server

A redundant connectivity server was installed, guaranteeing the availability of the system. The license of this system covers 600 redundant tags.

#### Operator and engineer workplaces

The control room has two operator workplaces with Batch functionalities: one with four monitors for operating the pro-

## 2 Operator workstations in the control room



cesses, and another for monitoring batch processes (ie,PFC), editing recipes, accessing data, including making online changes to the recipe → 2.

The second workstation also features the engineering workplace where the operator can make adjustments, changes and enhancements in the control system.

#### Controllers

The system has three AC800M controllers: two in redundant configuration, for process control, and one for auxiliary plant equipment which4 connects the plant meters via a Modbus RTU network → 3. This setup prevents the process controllers from being overloaded with data traffic tasks that could affect the performance of the CPUs.

#### Fieldbus and I/O modules

The system has a control rack for the controllers and DP/PA converters; and four distributed control racks that have remote I/O modules connected by Profibus DP. The I/O modules for hazardous areas are S890. Each reactor has a Profibus DP master module to which the variable-speed drives and I/O modules are connected via remote DP/PA converters. For this project, Profibus PA instruments such as Series 266 pressure transmitters, temperature transmitters and Coriolis mass flowmeters were also supplied.

#### And the reaction is ...

Amtex’s primary goals for automating its chemical process were to increase production to around 30 percent and access realtime and accurate information on the production process. Now, with the process fully automated with System 800xA Batch Management, the production in the plant has increased to around 35 percent. In addition, with Information Management capabilities, Amtex now

## 3 Traffic management with AC800M controllers



has historical information on which to base decisions in the future.

Juan Camilo Arango, General Manager of Amtex said, “With the System 800xA, we are completely convinced we may offer our customers reliability and repeatability in our products. Nowadays customers worldwide seek minimal changes in their process and the only way of managing it is by reducing process variables.” Amtex plans to replicate the automation project for its other plant in Colombia, also collaborating with ABB’s channel partner Automatización S.A. Now that really is a great reaction to the project’s success and the client’s satisfaction.

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#### Reference

[1] Wikipedia. Retrieved December 2012 from [http://en.wikipedia.org/wiki/Carboxymethyl\\_cellulose](http://en.wikipedia.org/wiki/Carboxymethyl_cellulose)