



Pemex Grows and Improves with 800xA Safety and Control Solutions from ABB

Pemex is improving control and safety systems in all its plants and continues to build new facilities. It has support from ABB in all areas of control, safety, instrumentation and power, in each of its subsidiaries. ABB's Analytics, Instrumentation and Services solutions are also utilized by Pemex.

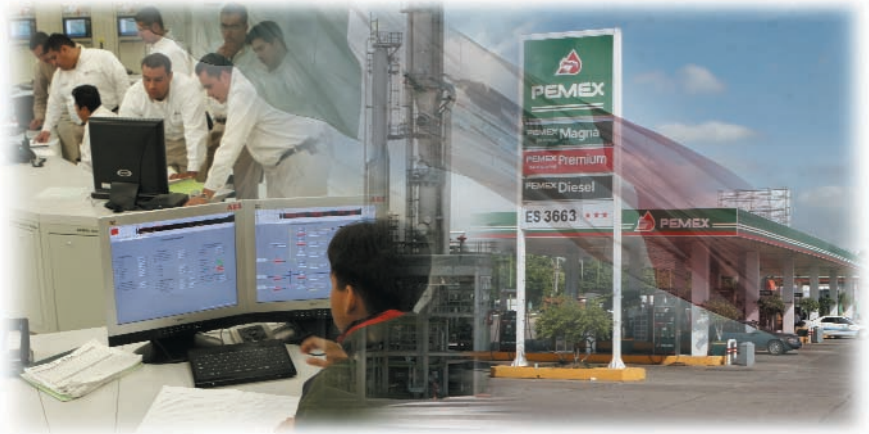
Client: Petróleos Mexicanos, or Pemex

Location: Mexico

Scope of Work: ABB's System 800xA Extended Automation

"Thanks to the integration of information that we have, we can make decisions and correct them in a faster manner than we had been doing for many years. In this sense we feel that we have a competitive advantage over other companies that process gas."

Mr. Manuel Chaves
Manager of Operations Support and Industrial Environmental Safety
Pemex Gas, Villahermosa (Tabasco), Mexico



Pemex, the largest company in Mexico and third largest producer of crude oil in the world, continues to build its competitive advantages in the marketplace with support from ABB. This is done with modernization of existing installations as well as incorporation of ABB solutions into new, greenfield projects.

The Background

Petróleos Mexicanos – or, “Pemex,” is a decentralized public entity of the Mexican Government. It's the largest company in Mexico. In 2003 it was the third largest producer of crude oil in the world and, according to *Petroleum Intelligence Weekly*, was also the ninth largest oil and gas company in the world. Pemex consists of four operating subsidiaries: Pemex Exploration and Production, Pemex Refinery, Pemex Gas and Basic Petrochemicals and Pemex Petrochemicals.

A principal initiative of Pemex has always been to modernize and renew itself. A fundamental part of this ongoing renewal is implementation of the latest process automation and safety control system technology. This is why Pemex has begun improving the control and safety systems in all of its plants, including duct areas where hydrocarbons are transported and drilling fields. Pemex has support from ABB in all areas of control, safety, instrumentation and power, in each of its subsidiaries. ABB's Analytics, Instrumentation and Services solutions are also utilized by Pemex.

The Solution

Pemex' Gas and Oil Chemists subsidiary, or "Pemex Gas," sends ethanol, liquid gas and natural gasoline to another Pemex subsidiary, where it is processed into secondary oil products and ethanol derivatives.

The relationship between ABB and Pemex Gas began in 1984. Since then the client – provider relationship has grown. Now the majority of Pemex Gas' installation - from the automation to the electric areas - is ABB. Pemex Gas has begun implementing ABB's 800xA Extended Automation Technology in several locations.

Pemex' gas plants manage products that are flammable and explosive. They require automation and safety systems that are robust, flexible and powerful; that enable visibility of information, integration of third party solutions, quick response time, process optimization and the ability to evolve in a logical, cost-effective manner. It's important that the control systems include the management of safety.

Real-Time Integration of Information

Pemex integrates information from their plants in the control systems, where they make global decisions with a financial focus. "With this information, what we can do in real-time is calculate the strategic indicators of the company in such a way that for each processing unit, for each plant, for each complex and also for all the production decisions, we can calculate the natural gas processing indicators, such as costs or actual unit efficiency," says Mr. Manuel Cháves, Manager of Operations Support and Industrial Environmental Safety for Pemex Gas in Villahermosa (Tabasco) Mexico.

He continues: "We put in real-time strategic indicators. If there is a problem, we can identify which variables are provoking the strategic indicator and take corrective action. Thanks to the integration of information that we have, we can make decisions and correct them in a faster manner than we had been doing for many years. In this sense we feel that we have a competitive advantage over other companies that process gas."

Pemex Gas is improving their decision making process by integrating information from all their gas processing plants into a third party plant information system, which will be integrated to SAP. This compiles all data while enabling each area, such as operations and safety - to access only the part that is for them, eliminating confusion, increasing decision speed and improving safety and quality.

Why Choose ABB?

- Reducing Time to Decision and Action
- Optimizing Plant Asset Availability and Performance
- Benefits to Your Bottom Line
- Reducing Risk Through High Integrity
- Investment Enhancement Through Evolution
- Integrating Information for Improved Visibility
- Global Partner - Local Presence

"The manner in which ABB will provide many services and products is going to be faster now that they are a secure SAP provider, and that's going to benefit Pemex a lot," says Mr. Cháves. "We're going to have fast acquisition of materials, and the ability to manage low inventories in storage. This brings us benefits from the security and production points of view as well as reduced cost due to the reduced inventories."

Optimizing Plant Asset Availability and Performance

Plant optimization is achieved with daily process data and information from the control systems.

Mr. Cháves again: "We close cycles of production every 24 hours and make a calculation of costs in each plant. All factors are considered: costs, prices and also restrictions on transportation and production. Then, with a linear programming method, we determine the correct distribution for raw materials so that the products can be offered at the most optimal cost.

We've had good results in both operations and safety, with the ABB products in the gas plants under my responsibility. "

"The benefits that this control system offers us are excellent," says Mr. Israel Martínez, Chemical Engineer, Superintendent of Gas Processors at Pemex' Burgos Complex in Reynosa. "It's an open system. It offers us a lot of benefits of integration with external systems. I need to be aware of the conditions of the fluid, pressure and temperature - the quality of the products and the contingencies that can present during daily preparation. I can obtain this information directly from the distributed control system through the OPC communication interface.

Because we have many functions spread out over large areas of the complex, integration of all data in one control room is an advantage."

Benefits to the Bottom Line

“The precision that the control system gives us permits us to take the parameters of control to the limit. Operating in these conditions allows us to distribute more product and have major gains,” Mr. Martínez adds.

Reducing Risk Through High Integrity

The 800xA Extended Automation control system allows Pemex the advantage of visualizing the integrated system of safety, the fire system and the control system of the processing plants - which represents an enormous reduction in risk.

Onscreen graphics allow visualization of a problem at the time that a decision must be made. Decision making speed is especially important to Pemex’ Reynosa facility, which processes and delivers gas to the National Pipeline System.

“We can monitor the variables and calculate the strategic indicators of the production area in real time. Inside these indicators exist some that are of vital importance to us - the indicators of safety,” says Mr. Martínez.

Mr. Cháves again: “We have a very important project - a refrigerated terminal - in the area of Coatzacoalcos. We requested that a safety system be part of this project, and the specifications were very strict. The contract was won by ABB, who fulfilled 100% of the specifications for this refrigerated terminal. In future projects where we need safety systems as strict as the one we are specifying in the refrigerated terminal of Coatzacoalcos, ABB’s an option.”

Mr. Martínez again: “From my viewpoint as superintendent of production (at Burgos-Reynosa), both process control and the safety of this installation depend on the control system. ABB’s 800xA control system was selected because it met all our rigorous specifications; including versatility and speed of application. The principal benefit I obtain is its communication capacity, which allows me to monitor in real time the critical variables I need to make decisions on time.”

“For Pemex, safety is very important,” says Mr. Alfonso López Zamudio, Communications and Electronic Engineer for Pemex Gas and Oil Chemists Basic. “Having control systems that are more reliable gives us confidence because our processes and the quality of our products become better and more acceptable for our clients, there is no problem with quality, and the industry “does more with less” as it is said.”

Investment Enhancement Through Evolution

“I believe that with every evolution, with all the changes of instrumentation, ABB control systems have enabled us to improve the efficiency and efficacy of our plants,” says Mr. López Zamudio.

One of Pemex’ current modernizations is a fractioning plant in the gas processor complex Nuevo Pemex, where they had an Advant control system from ABB.

Mr. López Zamudio again: “We achieved evolution and modernizations in stages, allowing us to make changes without stopping the plants - they’ve practically been made online. The systems allow us to optimize configuration time, use less time for service, to configure a loop or to identify an indication point in our system. Our decision making process is in operations, safety, maintenance, administration and finances. The ABB control system enables each level to invest less energy to obtain more product of better quality.”

Global Partner - Local Presence

“Something that distinguishes ABB from the rest here in the southeast of Mexico, I think is the attention they’ve given us, in attending this site, this market,” says Mr. López Zamudio. “We have personnel supporting us in case of any event or corrective maintenance in a system. This is something that the other leaders, other manufacturers of distributed control systems don’t have here in the southeast zone.”

For more information on how ABB’s Industrial^{IT} technology can be employed to solve your safety and refining control issues, visit us at www.abb.com/control systems and www.abb.com/oilandgas.



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