



AGRICULTURE

BACSOFT CASE STUDY CARTAVIO WELLS



ABOUT CARTAVIO WELLS

Cartavio S.A.A. is an agribusiness dedicated to the cultivation, processing and industrialization of sugar cane, as well as to the marketing of products such as sugars, alcohol, molasses, bagasse, and more. Located in the province of Ascope, Peru, the Cartavio sugar mill is the oldest in the country and has been part of Grupo Gloria since 2007.

Cartavio owns an area of 7902.95 hectares and its fields are irrigated by the Chicama River. Today, it has over 6,500 hectares under cultivation. Each day the mills grind more than 6,500 tons of cane and produce over 700 tons of sugar. Cartavio also runs a distillery with the capacity to produce 18 million liters of alcohol per year. Cartavio is known for the efficiency of its extraction, recovery and juice processing thanks to investment in modern technology, strict process quality control, and committed staff training.

PUMPING VITAL WATER FOR IRRIGATION

The land is irrigated by flooding, and since it is a dry region, the irrigation water is pumped from 700 wells spread throughout the area. Some of the pumps are used to directly irrigate the surrounding area, and others pump water into a network of irrigation canals. The pumping operation is vital to the success of the sugar crops.

To keep the pumps operating at all times, Cartavio employs a team of 50 irrigation and pump maintenance specialists who are out in the field ensuring the continuity of the water supply. Until recently, all pump operation was completely manual and dependent on periodic inspection in order to verify that the pumps were operating correctly.

THE CHALLENGE GAINING VISIBILITY AND CONTROL OVER IRRIGATION WELLS

Since Cartavio's irrigation team had no way to remotely monitor or control the pumps, it was virtually impossible to manage their resources. Teams would routinely visit each of the 700 pumps to verify that they were working, fix malfunctions, perform routine maintenance, and manually turn them on or off. Since the pumps are so widely spread out, this involved a great deal of time.

In addition, the area suffers from an unreliable supply of electricity. Sometimes wells would shut down due to electrical failure or malfunction, and the problem would not be discovered until after the crops were damaged. Cartavio saw the potential of M2M and the emerging Internet of Things (IoT) to transform their business and not only eliminate their losses, but increase their productivity. They decided to connect all of their wells to the network and enable their managers to monitor and control the entire system through a new web-based application that they could access from their offices and on the move.

THE SOLUTION BACSOFT IOT PLATFORM

Cartavio looked for a partner that could provide them with a complete solution for connecting their legacy infrastructure and developing SCADA applications for the control room, web and mobile. In addition to remote operation of the pumps, Cartavio needed visibility into operational status, electrical supply, underground water levels, lubrication and blockages.

They selected Bacsoft's comprehensive IoT platform. Designed for the transformation of legacy infrastructure, the Bacsoft platform enabled them to deploy an end-to-end solution quickly and simply. The platform includes:

M2M Communications

The Bacsoft Smart Communications Controllers were connected to all of the sensors at the pump site in order to provide M2M connectivity. Designed to operate reliably under all kinds of conditions, the Bacsoft Smart Controllers are efficient, cost-effective and easily scalable. Since the electrical supply is unreliable, the controller has a back-up battery and sends an alert if there is an electricity outage.

IoT Cloud

The Bacsoft IoT Cloud handles all aspects of communications, application execution, data storage, security and auditing in a high-availability environment in the cloud.

Bacsoft Application Builder

With the Application Builder, Bacsoft quickly created a web console application that provides remote operation and visibility into the operation of the wells. Looking ahead, Cartavio will be able to expand the console to include additional analysis and reporting on the data that is collected.

In addition to the IoT platform, Bacsoft supplied the sensors that Cartavio needed to optimize their pumping operation:

- Flow rate detection using an innovative solution based on pressure measurement, to avoid the deployment of expensive flow rate sensors to areas where they would be vulnerable to theft.
- Lubrication sensors that check the state of the pump lubricant, regulate the supply, and send an alert if it is low or if the pump is blocked.

The cellular infrastructure is provided by Telefonica's M2M solution, which offers unique data roaming capabilities that enable wells at different sites to connect through different networks to provide the best possible service.

ANYTIME, ANYWHERE VISIBILITY

The Bacsoft Smart Controller collects data and transmits it to the cloud. From the Cartavio control room, the operations team is using the new web dashboard to turn on and shut down pumps, regulate the water supply, and send maintenance crews.



“NOW THAT THE BACSOFT IOT PLATFORM IS PROVIDING COMPREHENSIVE INFORMATION ON THE STATUS OF THE WELLS IN REAL TIME, WE EXPECT CONSIDERABLE ENERGY AND WATER SAVINGS, AS WELL AS A REDUCTION IN DOWNTIME AND MAINTENANCE COSTS FOR PUMPS.”

Agricultural Operations Manager for Perú, Colombia & Ecuador, Complejo Agroindustrial Cartavio SAA

With their tablets and laptops, Cartavio’s managers receive real-time notifications of electrical outages and mechanical failures and are able to respond immediately to issues, before they can negatively impact irrigation. The project, which began with a single pump, is now expanding to the entire network of 700 sites.

BACSOFT BENEFITS FOR CARTAVIO

- FASTER PROBLEM IDENTIFICATION AND RESOLUTION
- OPTIMIZED UTILIZATION OF PUMPS, LONGER LIFETIME AND HIGHER CAPACITY
- MAINTENANCE AS NEEDED, FEWER ON-SITE VISITS
- MORE ACCURATE AND RELIABLE IRRIGATION FOR BETTER CROP YIELDS
- SAVINGS IN ENERGY AND IN WATER
- COMPLETE SOLUTION FOR BOTH SCADA AND M2M
- GRADUAL TRANSITION, LEVERAGING LEGACY EQUIPMENT AND PROCESSES
- RAPID DEPLOYMENT – ONLY 2 HOURS PER SITE
- EASY TO USE, CONFIGURE AND EXPAND
- ANYTIME, ANYWHERE ACCESS FROM WEB AND MOBILE DEVICES
- RELIABLE, SCALABLE CELLULAR M2M COMMUNICATIONS FOR 700 SITES
- LOW TOTAL COST OF OWNERSHIP
- FULL-SERVICE, TURNKEY SOLUTION

“DUE TO THE SAVINGS GENERATED DURING THE BACSOFT PILOT, WE HAVE ESTIMATED THE OPTIMIZED PERFORMANCE OF THE PUMPING STATIONS AND EXPECT A RETURN ON INVESTMENT IN ONLY 2 YEARS.”

Manager of Wells, Complejo Agroindustrial Cartavio SAA

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