Cano Petroleum: Cockrell Ranch Waterflood What Wireless Network?

The Cockrell Ranch Waterflood project is an ambitious enhanced oil recovery project, located in the Texas panhandle. Cano Petroleum uses state of the art technology and methods to successfully recover oil from wells that would have once been considered 'tapped'. The waterflooding process uses pressurized water to move through the formation, driving raw crude oil out of the ground from wells.

Boss Automation of Spearman, TX was brought in to design and install the discrete automation platform and a control network to monitor pressure and flow of this water into the wells. With their experience in automation, control and process optimization, the project evolved into the design and implementation of a new, fully automated, self-monitored SCADA system. The system was designed to gather, assemble, and transmit data from the wells and injectors and ultimately bring it back to a Master Station. This allowed the day-to-day operation of the field to be monitored and controlled from these sites, and allowing the collected data to be used to produce detailed production models.

Considerations for the system included: reliability, maintainability, ease of use, as well as the ability to obtain local support. With the aid of Rexel, the local Allen-Bradley distributor, Boss Automation decided on a winning combination of Allen-Bradley hardware, Rockwell Automation software, and ProSoft Technology wireless communication solutions. Boss Automation's familiarity and past success with these automation products made them confident in the combined solution.

The SCADA system consists of one ControlLogix at a Main Master Station tied to four ControlLogix slave sub-stations and over one hundred custom-built Remote Terminal Units

(RTUs), each comprised of an Allen-Bradley MicroLogix 1100 Programmable Logic Controller (PLC) and a ProSoft Technology Industrial Hotspot radio. The Main Master Station and four sub-stations represent the backbone network of the project. Each of the four sub-stations acts as a Master for its respective sub-network. All communication from the wells and injectors to the sub-stations, and from the sub-stations to the Main Master Station, is handled wirelessly using ProSoft Technology's Industrial Hotspot solution.

Paul Brooks, Business Development Manager, Networks Portfolio for Rockwell Automation notes, "For this application, ProSoft's wireless technology provides the backbone communication for the integration of this system creating a reliable, industrial and transparent network which allows Cano Petroleum to successfully monitor their process data remotely."

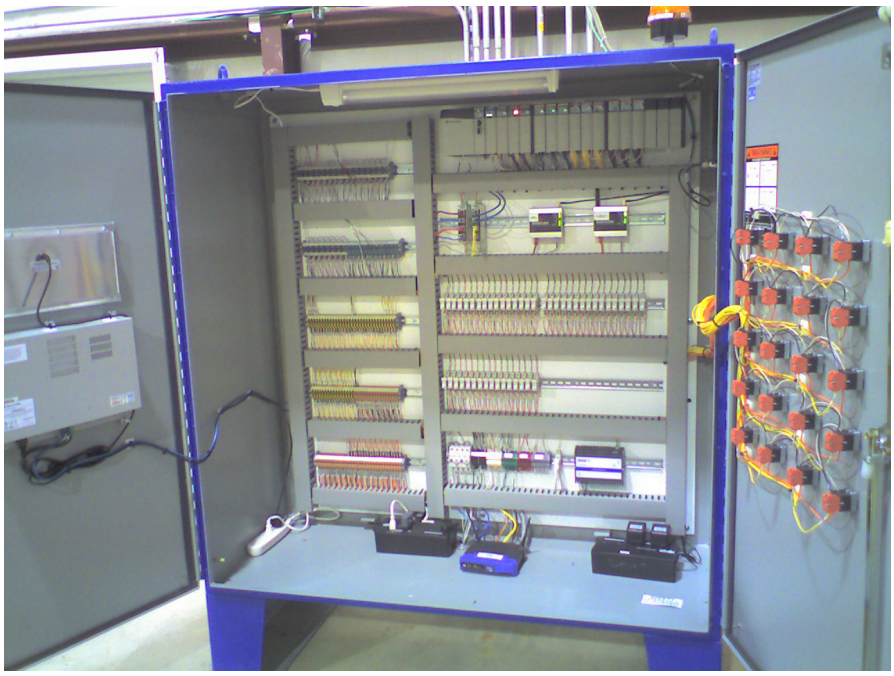
At the Main Master Station, a Human Machine Interface (HMI) application for the system was developed using Rockwell's RSView 32 software. The graphical interface screens have proven to be user-friendly, and the Messenger Pro feature provides the operators with detailed information about

RTU consisting of MicroLogix 1100 PLCs, discrete I/O, and RadioLinx Industrial Hotspot

alarm conditions in human voice, by automatically calling the cell phone of the person on call. ProSoft Technology's RadioLinx OPC Server is used on the remote access computer to monitor the status of the radio network.

An impressive amount of data—over 3500 discrete Input/Output as well as 1000 analog points—is gathered and moved across the wireless network at about 11 Mbps to the Main Master Station where it is then assembled into data log models, then interfaced by Cano's own proprietary modeling software.

Rexel was instrumental in providing logistical as well as technical support for the project. With respect to this large-scale wireless network, ProSoft Technology provided engineering support throughout the length of the project.



Main Master control station

Patrick Haga, ProSoft Technology Wireless Engineer comments, "From the technical side of the project, the main reason this is a success story is because of the planning and care taken before starting the project. I probably spent close to 80 hours all told working with Boss Automation Control Engineers on a Path Study using ProSoft's Pathloss software. We worked very closely together, before and throughout the installation of the project, not only on the layout of the network but on the strategy for PLC messaging."

The overall network covered approximately twelve square miles with the longest link being only about two miles, and a bulk of the radios were positioned in an area of about 3 square miles which presented a concern. "In a radio network of this size it is imperative that care be taken in setting up the PLC messaging," said Haga. "If all radios are trying to communicate at the same time, you can quickly swamp your bandwidth with RF collisions and retries."

Haga continues, "This in mind, we discussed the need to create a polling style network rather than having all the radios trying to communicate at the same time. It takes a lot of planning up front to successfully install a radio installation of this size, and ProSoft's Technical Support group provides an excellent planning resource."

Chris Deakin of Boss Automation comments, "The process is incredibly reliable, consistent and makes for an essentially self-managed site. From the main SCADA monitoring station, the operators are able to see virtual diagrams of the wells and what is going on within them, as well as all the data collected by the RTUs and control units."

The project went live in spring of 2008, and has since had near zero downtime. "The wireless network works so seamlessly and reliably that it is virtually transparent to the user," Deakin elaborates. "When all was said and done I asked the customer how they liked the wireless network. Their response: *what wireless network?*"

Harry Forbes of ARC Advisory Group notes, "The Cockrell Ranch Waterflood project illustrates 3 important points about industrial wireless. First, wireless is indispensible for this kind of SCADA project to be cost-effective. Second, end users need to select hardened, industrial, field-proven products to provide a lifelong, reliable wireless solution. Thirdly, a well-designed wireless network can deliver data in a SCADA system with very high reliability, in fact so high that end users forget about it."

About Cano Petroleum:
Cano Petroleum Inc. is an independent Texas-based energy producer with properties in the mid-continent region of the United States. Led by an experienced management team, Cano's primary focus is on increasing domestic production from proven fields using enhanced recovery methods. Our focus on mature oil fields with proven reserves eliminates exploratory and international development risks. Cano trades on the American Stock Exchange under the ticker symbol CFW. Additional information is available at **www.canopetro.com.**

At Boss Automation each project begins with a comprehensive evaluation of your control system needs. Here, we gain a thorough understanding of the process involved and objectives you want to achieve. Together, we will answer the question: How can we make your process more efficient? We will examine possible options and determine the most cost effective solution for your project. The result will be an operator friendly and process matched answer typical of Boss Automation's signature…Systems that overcome past barriers, improve today's process, and dominate the future.

We can add value to your company by enhancing productivity, consistency, and efficiency in your production process, therefore adding extra dollars to your bottom line.

Our systems incorporate state of the art Programmable Logic Controllers, graphical HMI (human-machine interface), industrial computers and hardware that can be custom configured to match your exact process.

Boss Automation's systems are easy to master, ensuring a reduced training period, which will lead to a sooner startup.

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For over 20 years, ProSoft Technology products have been used worldwide in nearly every industry. Our product lines have grown to over 400 communication modules supporting more than 60 different industrial protocols. ProSoft Technology has regional offices around the globe along with worldwide distribution to meet all your industrial application needs.
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