

Frontier El Dorado Refinery Saves Time and Resources While Improving Decision Making with Honeywell OneWireless Solution



“We needed to find a way to monitor which units were adding load on our flare gas recovery unit, so that we could proactively work to eliminate the sources of the load. Honeywell’s OneWireless solution enabled us to remotely monitor and track this data and improve our decision making. Our engineers love the solution and with 10 multinodes in place we have a solid infrastructure upon which to base future wireless initiatives.”

Tom Rhein, Project Engineer, Frontier El Dorado Refinery

Benefits

Engineers at the Frontier El Dorado Refinery were looking for a way to efficiently monitor the load on the refinery’s flare gas recovery unit (FGRU). Whenever the rate on the unit increased, operations personnel had to scramble to determine which of the units was contributing to the load. The flare system lacked the instrumentation necessary to conclusively determine which units were contributing, making it difficult to identify and correct the issue. Prior to this project, operators and engineers throughout the plant expended considerable amounts of time investigating the equipment in their units to determine if it was contributing to the load on the FGRU.

Honeywell worked with the El Dorado Refinery to design an optimal wireless infrastructure that would best support a system spanning almost one square mile. By installing wireless pressure transmitters at each unit’s tie-in to the main flare header, Frontier enabled its process engineers to quickly detect pressure changes that would indicate the flow of process material from a unit to the flare gas recovery unit. This has enabled the company to save manpower and time while improving decision making at the refinery. In addition, the new wireless system was seamlessly integrated into the Honeywell Experion® DCS that El Dorado already had onsite, making for a comfortable, uneventful transition.

El Dorado selected Honeywell and its OneWireless solution because of its cost-effectiveness, ability to provide the needed infrastructure, and seamless integration with its Honeywell Experion DCS. Frontier El Dorado engineers and management appreciated the comfort level afforded by the dedicated multinode mesh and saw this project as an opportunity to implement a wireless infrastructure whose benefits would extend far beyond this initial application.

In the first six months since the system was installed, Frontier El Dorado has already seen numerous examples of the benefits that OneWireless has to offer. A few examples of these include:

- A substantial reduction in the engineering time spent locating the precise source of FGRU load with the new wireless indications in place
- Significant reduction in the amount of engineering and designer time required to issue construction packages for transmitter installations
- 50% reduction in the cost to install a wireless transmitter compared to traditional wired transmitters
- Savings on transmitter costs, thanks to the ability to connect multiple sensors (thermocouples, RTDs, etc) to a single transmitter and monitor them as separate process variables
- A scalable infrastructure that is easily expandable to areas presently without coverage



Frontier El Dorado Refining Company takes advantage of Honeywell's OneWireless solution to save money, time and resources in monitoring pressure readings refinery wide and positively impacting its environmental performance.

Challenge

Many refineries face the challenge of environmental regulations and the ability to work within specific parameters. Frontier El Dorado Refining Company faced a similar challenge when trying to proactively monitor and control the load on its flare gas recovery unit.

"We needed to find a way to monitor which units were increasing the load on our flare gas recovery unit, so that we could proactively work to eliminate the sources of the load," said Tom Rhein, Project Lead and Engineer, Frontier El Dorado Refinery. "We knew the total amount of material going to the FGRU, but not where it was coming from, meaning that each event required us to investigate every unit, which was time consuming and inefficient."

Rhein and others had been looking for an opportunity to introduce wireless to El Dorado, and this project looked like a perfect fit. "This application spanned the entire plant, and involved monitoring pressures in several remote locations," continued Rhein. "In short, it was the perfect candidate for a wireless network."

Solution

After reviewing proposals from multiple vendors, Frontier El Dorado selected to work with the Honeywell team and implement its OneWireless network. Honeywell's OneWireless solution is an industrial wireless mesh network that extends the process control network into the field to deliver applications that improve plant efficiency, reliability and safety. The wireless mesh network is formed with industrial wireless nodes, called multinodes, that self-discover to create an industrial mesh network within seconds. A cost-

effective, multi-functional wireless infrastructure designed to extend process control applications and support both WiFi devices and wireless transmitters now and into the future, Honeywell's OneWireless provides the same level of security, robustness and scalability expected from wired solutions.

Honeywell teamed up with Frontier El Dorado to implement 10 multinodes throughout the one square mile refinery. "We considered other vendors but ultimately determined that a wireless system built around a physical backbone of multinodes was the best solution for this application," said Rhein. "Honeywell was able to tell us where to place the multinodes to use this system most effectively."

The solution also provided a secure connection between the wireless network and the Honeywell Experion DCS via a OneWireless Firewall. With Honeywell's Experion, users are able to easily and safely connect ISA100-hardware compliant wireless I/O devices and Wi-Fi clients to the control system.

"We were able to take full advantage of the communication between Experion and the OneWireless system to add, configure and monitor wireless devices within our existing Experion DCS," said Helen Haskin, Sr. Process Control Engineer, Frontier El Dorado Refinery.

OneWireless native integration with Experion enables users to:

- Reduce the device commissioning time of ISA100 hardware-compliant devices
- Reduce lifecycle costs by taking advantage of Experion's system maintenance tools
- Minimize training by using existing applications
- Improve reliability and scalability with Experion's built-in redundancy features

"Our operations personnel are very excited that not only do we have a cost-effective solution to the problem at hand, but that we can now take advantage of the infrastructure that is in place to add new transmitters in a much more timely manner," said Haskin. "We also are seeing a 50% reduction in the cost to add a wireless indication compared to the cost of a traditional wired indication."

Frontier El Dorado installed seventeen wireless pressure transmitters across the plant as part of the initial infrastructure installation, and have nearly doubled the number since, with numerous additional applications already identified. The company has chosen to standardize on transmitters utilizing the high-gain antennas, as these were found to enhance the reliability and range of the transmitters.

All of the wireless pressure readings have been added to Frontier El Dorado's data historian where engineers and management can see a plant-wide picture of the flare system. If an event occurs that increases the load on the FGRU, the refinery is able to quickly and definitively pinpoint the source and take timely corrective action.

"From an engineering perspective this has made our job much easier," continued Rhein. "Whereas in the past adding a transmitter required walking out conduit routes and putting together wiring diagrams, now we can simply mark up a P&ID (Process and Instrumentation Diagram) and issue a construction package in a fraction of the time we used to."

With the wireless network already in place and seamlessly integrated with Honeywell's Experion DCS, Frontier's El Dorado refinery is able to easily grow its wireless initiative and looks to the future for wireless process control.

More Information

For more information on Honeywell's OneWireless Solution or any of Honeywell's Products, Services, or Solutions, visit our website www.honeywellprocess.com, or contact your Honeywell account manager.

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