

Extending the Control Network to Remote Enclosures



Refineries often have multiple remote control locations or separate control rooms throughout the plant. Many operate as islands with little connectivity between them. But, as more companies seek to consolidate their control rooms, they are realizing the importance of automating remote locations and consolidating data into a centralized area. A refining facility in the western United States is facing such an issue.

Strategically consolidating its control rooms, the company is automating parts of the plant that once relied on manual intervention. The facility currently has multiple flow stations throughout the plant with valves that are still manually managed. Sending an employee to move the valves reduces productivity and introduces variability.

As the process is automated, they plan to establish multiple remote instrument enclosures (RIE) to service these flow stations. And, the flow stations will have data connectivity back to the control room, approximately half a mile away, to integrate into the blending and movement automation system.

The unmanned RIEs will host redundant Honeywell Experion C300 controllers with the goal of connecting 1,600 to 2,000 total devices, including motor-operated valves and FOUNDATION Fieldbus transmitters for automating the blending and movement.

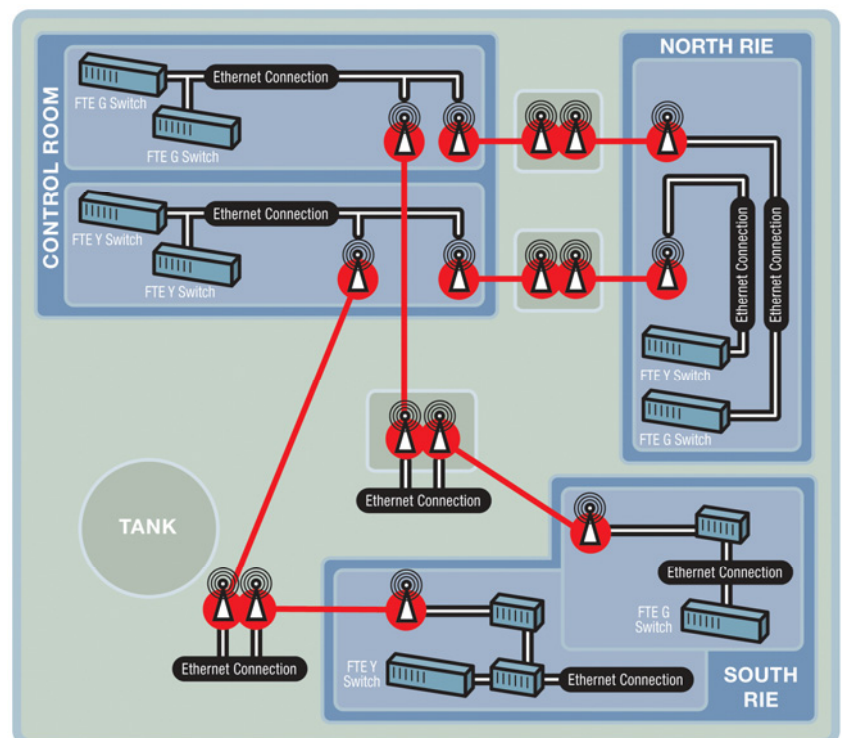
Engineering the data connections for the remote sites was one of the greatest challenges. The facility's existing fiber optic cables were overloaded, and there was no existing cable in the area where they needed the RIE, which made it impossible to install cable and keep the project on-time and within budget.

Wireless offered the most efficient alternative. However, the company had several system requirements that needed to be met. They needed high availability and reliability for supervisory control from their advanced blending and movement applications.

The terrain around the facility site posed several challenges to maintaining throughput over the interferences and long distances. And, the site is located in a residential area, which could pose additional interference and security challenges.

They chose Honeywell's Experion® Process Knowledge System (PKS) as the distributed control system (DCS) for the central control room. Experion offers the ideal system for central control room support, integrated wireless support and efficient FOUNDATION Fieldbus device management and implementation.

Next, Honeywell addressed the wireless network implementation. To address the requirements for high availability and reliability, Honeywell suggested establishing a wireless Fault Tolerant Ethernet (FTE) network to the RIEs. Honeywell's FTE establishes two active paths that load-share between the two and survive multiple faults, not just dual faults. This functionality is maintained even with a wireless implementation.



To ensure high throughput of device and system messages (including alarms), the team established a creative way to reduce the number of wireless hops to avoid hills and a high density metal building. Honeywell connected two multinodes together via wired Ethernet so the two units could work together to eliminate the throughput loss at that hop (or bridge) point.

Honeywell performed several pre-test exercises to prove reliability and availability. The corporate IT group reviewed the security methods and approved the solution. Among the features they most appreciated were the ability to optionally disable Wi-Fi and sensor connectivity and the encryption of

sensor communication messages within the wireless field I/O device itself prior to being sent.

In the end, the Honeywell solution not only helped the facility with their schedule and budget requirements, but established a network that can be used to expand with other wireless applications, such as backhauling gas analysis data, supporting mobile workers with hand-held computers, and integrating wireless video. With the wireless network in place, employees will be more efficient and can be allocated to more essential tasks. The company can also utilize the additional data available to their advanced applications to further optimize the facility's blending and movement process.

More Information

For more information on Honeywell's OneWireless solutions, visit our website www.honeywell.com/ps/wireless, or contact your Honeywell account manager.

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