RAJANT

RSN Solutions Enables
Kinetic Mesh® Wireless Network,
Extending Coverage in Hazardous Area Effectively with Rajant

Located in southern Australia, a gas processing facility was dealing with the challenge of enabling continuous connectivity for workers inside the hazardous areas of the plant.

Effective network access already existed in nonhazardous areas, but the owner wanted to extend connectivity into hazardous areas to provide Wi-Fi coverage for mobile workers who move between hazardous and nonhazardous areas.

In nonhazardous environments, communication is enabled using a basic transponder, receiver, and transmitter within the work area, but in facilities that include hazardous environments traditional access points —devices that connect to a LAN to provide Wi-Fi coverage—are not suitable. Equipment installed in hazardous areas must be certified for use in these conditions.

The Challenge

The plant owner wanted to ensure connectivity throughout the plant, but no provider had been able to deliver a simple solution to enable comprehensive coverage.

For access points to be used in the hazardous areas of a gas plant, they must be certified for sites classed as Zone 0 (areas where an explosive atmosphere is present continuously or frequently present) and Zone 1 (areas where an explosive atmosphere is likely to occur occasionally during normal operation). Most companies that could provide a solution use equipment that has to be certified for each installation, a time-consuming process that does not always deliver the best results.

RSN Solutions, a telecommunications and network systems integrator, was contracted to resolve this problem and deliver reliable wireless coverage for the entire gas processing facility.

According to RSN Solutions Director Gideon Parker, who managed the installation, the challenges on this project created a unique opportunity.

The Facility

- A gas processing facility in southern Australia that covers 1.5 sq km of hazardous and nonhazardous work areas. Built to process fluids from the Haselgrove three development in the offshore Otway Basin, the facility produces sales quality.

The Partners

- **Rajant:** Provides peer-to-peer radio communications enabling data, voice, video, and autonomous applications.
- **RSN Solutions:** Solutions: provides cutting edge engineering services and turnkey solutions for telecommunications and OT cyber security.

Solution Components

- Rajant Kinetic Mesh® private wireless network consisting of BreadCrumbs® housed in Exd rated enclosures.
- BC|Commander installed on VM connected to the local network and accessible from a virtual jump box.

Outcome & Impact

- Exd component rating allowed coverage in hazardous areas.
- Simple, rapid installation did not disrupt plant activities.
- With BreadCrumb point-to-point capability, workers have continuous, site-wide connectivity.
- Mobile crews now perform inspections while connected to subject matter experts.
- This installation showed that retrofitting is fast and easy.

The Solution

RSN took on this project using the Rajant Kinetic Mesh® wireless network, which employs BreadCrumb® radios powered by InstaMesh® networking software to enable real-time data transfer. BreadCrumbs seamlessly integrate with any Wi-Fi or Ethernet-connected device to deliver low-latency, high-throughput data as well as voice and video applications across a meshed, self-healing network. Using Rajant's Kinetic mesh network with the BC|Commander Network Management and BC|Enterprise Network Monitoring Software enables uninterrupted, comprehensive, real-time communication.

The differentiator for Rajant's technology is that it is Exd rated, which allows the networking system to provide coverage in hazardous areas. The BreadCrumb network nodes, or radios, are housed in an Exd enclosure, and the system uses intrinsically safe RF couplers to connect to the antennas located within the process plant. Because the system meets all the requirements for use in Zone 1, it can be deployed safely in hazardous areas.

BC|Commander was installed on local VM connected to the local network and accessible from a virtual jump box to enable remote support and commissioning.

Unlike other providers that required radios to be integrated and certified as a one-off solution, "Rajant developed a product that is certified and repeatable," Parker said. "No other provider is offering a standardized product with IECx certification."

During plant shutdowns, workers can use HD video glasses to conduct inspections and share what they are looking at in real time with subject matter experts who never have to be exposed to site hazards. Working with hazardous area rated tablets connected to the network, site workers can take photos and share files with the operations and maintenance team, who can provide insights for real-time adjustments and repairs.

The network also can interface with wireless sensors and devices around the plant, dramatically improving the monitoring of equipment in hazardous areas. Now, owners can gather and analyze equipment performance data outside the zone, improving asset performance and maintenance.

"In many cases, the number of manhours saved during shutdowns is game changing," Parker said, "amounting to 30% or more time saved per shutdown."

> "When you compare the cost and the ease of installation against the challenge of building new towers or the expense of deploying eNodeB's, Rajant is a far more cost-effective solution for marginal fields or stranded gas.
>
> **— Gideon Parker**
> Director at RSN Solutions

To overcome travel restrictions due to COVID-19, RSN created installation packs for each site based on data gathered from a site survey that included AutoCAD drawings detailing each installation site, termination, and hookup diagrams as well as field installation checklists that allowed the onsite electrical technicians to complete the installation and inspection before final HA inspections took place and the equipment was energized.

The best part of installing the Rajant solution," Parker added, "is that it is practically one-touch commissioning. It worked as designed from the outset."

The Results

Rajant technology takes Wi-Fi to the next level, enabling simple, straightforward, sitewide installation in plants that contain hazardous work areas.

By installing Rajant technology in the hazardous areas of this gas plant, the facility owner has not only achieved continuous connectivity for the entire plant and expanded the range of activities mobile crew can perform throughout the site, it has enabled smarter, faster decision-making and proven the viability of using this system in brownfield site retrofits.

The Rajant Kinetic Mesh system delivers a robust, low-cost solution that can address spectrum and geography constraints, integrate with LTE solutions and allow companies to address black spot areas that cannot be covered by expensive LTE expansions.

RAJANT
If it's moving, it's Rajant.
*Industrial Wireless Networks **Unleashed.***