Secure Wireless Communications for Connecting Fracturing Trucks
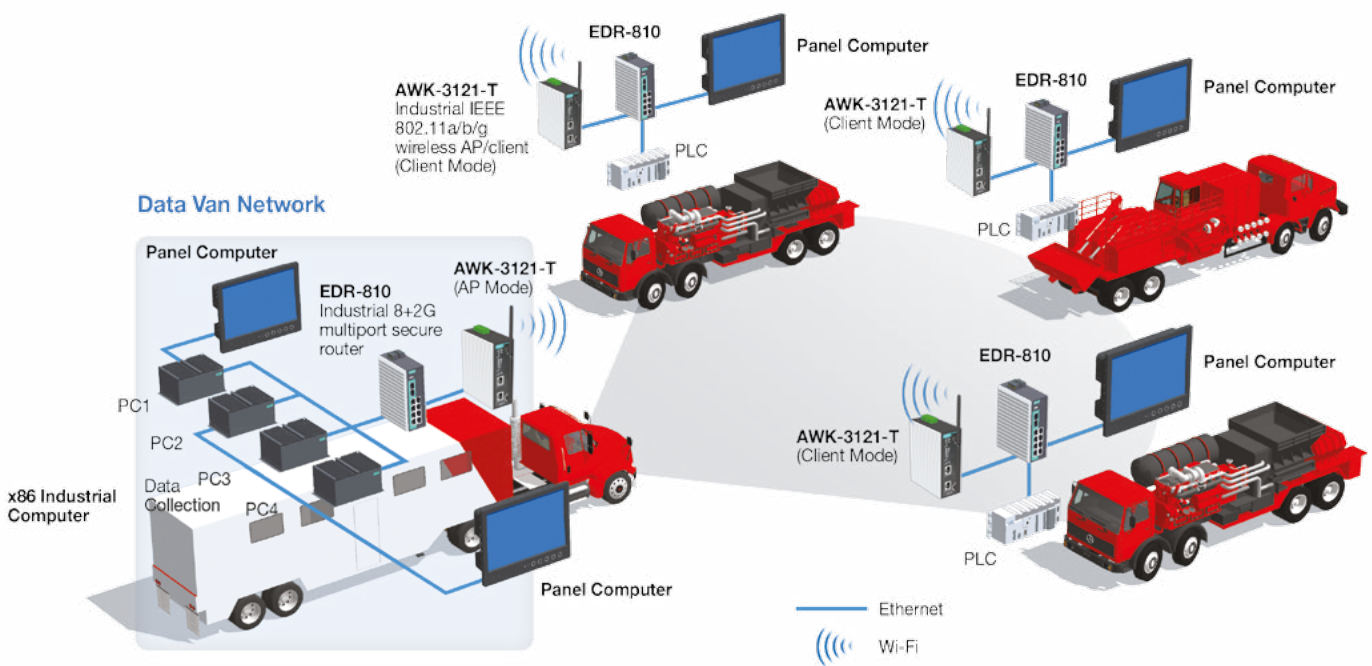
Location: USA

Application:

Oil Extraction with Fracturing Trucks

Customer Needs

- Equipment must be able to withstand hazardous conditions at fracturing sites
- Requires a flexible and reliable wireless network to ensure seamless connectivity
- A secure network for PLC devices that can transmit and receive error-free data

Moxa's Advantages

- Compliant with UL/cUL Class I Division 2, ATEX Zone 2 certifications
- An autoconfiguration function to ensure that any client device can switch to an access point (AP) when a primary AP is not available on a data van
- A secure router to provide deep packet inspection to eliminate unsafe data

Project Background

Some oil and gas applications require fracturing trucks to extract oil from shale. A fracturing service company has a fleet of trucks that they rent to oil extraction operators. Traditionally, wired cables are used to enable communications between the trucks and data vans at the site, but these cables often break or get cut, and they are very expensive to replace. For this reason, the fracturing service company decided to look into wireless options.

The ideal wireless device must provide a reliable and flexible network, allowing fracturing trucks to communicate with mobile data vans that collect data. In addition, a highly secure network that does not limit data transmission bandwidth is required to ensure that critical devices on the trucks and data vans can transmit and receive data error free.

System Requirements

- Must be able to withstand extreme temperatures and hazardous conditions at fracturing sites
- Flexible wireless networks that can replace wired networks
- A secure network for PLC devices to transmit and receive data error free

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Moxa's Solution

Extracting oil at a fracturing site could potentially cause serious damage if the on-site devices are not protected properly. Our AWK-3121-T wireless AP/client and EDR-810-T secure router are compliant with UL/cUL Class I Division 2 and ATEX Zone 2 certifications; they will function reliably in extreme temperatures between -40 to 75°C, making them well suited for oil and gas environments.

Fracturing trucks communicate with a nearby data van to receive and transmit critical data. To streamline the network's transition from wired to wireless, operators replaced their cables with our AWK-3121-T wireless AP/client to form a reliable and flexible wireless network. Normally, a wireless AP on a data van provides wireless access to several wireless clients installed on fracturing trucks. To ensure continuous wireless communications, these wireless clients negotiate to determine which wireless client should be configured automatically into a wireless AP that provides wireless access when the original AP used on a data van is not available because it's busy with another task. The AWK-3121-T wireless AP/client's auto-configuration feature allows operators to continuously control and monitor fracturing sites over a wireless network, at any time of the day or night.

A PLC is installed on each fracturing truck to control the oil extraction process. To ensure error-free data communication between the control center and the PLCs, Moxa's EDR-810-T secure router, which supports deep packet inspection, is used to ensure that all of the data packets transmitted and received between the control center and the PLCs are safe.

Benefits

- Compliant with UL/cUL Class I Division 2, ATEX Zone 2 certifications for oil extraction environments
- A -40 to 75°C wide operating temperature range for outdoor environments.
- An auto-configuration function ensures that wireless clients can be reconfigured automatically as APs when the primary AP is not available
- A secure router that supports deep packet inspection to ensure safety-critical data communications

Related Products

AWK-3121-T
Industrial IEEE 802.11a/b/g wireless AP/client

↗ http://www.moxa.com/product/AWK-3121_Series.htm

EDR-810-T
Industrial 8+2G multiport secure router

↗ http://www.moxa.com/product/EDR-810.htm

Recommended Products

AWK-3131A-T
Industrial IEEE 802.11a/b/g/n wireless AP/bridge/client

↗ http://www.moxa.com/product/AWK-3131A.htm

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