

Wireless Field Instruments Development & Applications

Abdulsalam Alsubaei

Saudi Aramco, Dhahran, Saudi Arabia

Industrial Facilities around the globe are awakening to the fact that wireless field instruments technology is competing with the conventional wired field instruments. However, wireless technology has not been widely implemented for in-plant applications. Concerns about reliability, security, and battery life of wireless devices have slowed the implementation of wireless options even where traditional wired solutions were cost-prohibitive or operationally difficult. With the broad range of wireless technologies and solutions available today, however, most process-industry operations can easily find applications where wireless offers a strong return on investment. Conventional field instruments use wires as a media to carry the signal to the control system. On the other hand, wireless instruments use the Radio Waves to transfer the signal to the control system. Three commonly used ISM (Industrial, Scientific and Medical) frequency bands relevant to the process industries are 900 MHz, 868 MHz, and 2.4 GHz. The frequency band can be used with a limitation on the transmission power. Saudi Aramco /Yanbu Refinery have tried the wireless technology for tank level monitoring. Authorization to use frequency band was an obstacle to utilize the technology. Most of the existing wireless manufacturers have designed their systems to met North America and Europe frequency requirements. Existing frequency bands are conflicted with GSM network in Saudi Arabia. An industrial frequency band should be approved by the government in order to enhance the use of the new technology.