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Reference



Overcoming barriers

In Bohai Bay, where China's largest offshore oil and gas production field is located, an integrated broadband wireless solution from Siemens helped the operator Liaodong establish reliable data transmission between production platforms and overcome barriers in offshore network communication.

Over the years, CNOOC's Liaodong Operating Company has deployed a number of offshore oil drilling platforms in China's Bohai Bay oil field, achieving consistent cumulative oil production equivalent to one-fourth of China's crude oil consumption in 2015 – making it one of China's most important sources of energy. However, until recently, these platforms were unable to share power resources or exchange data, which caused considerable challenges for centralized management.

Liaodong implemented a Distribution Management System (DMS) made up of multiple power sources. The DMS was put into trial operation in January 2013. However, bringing platform power plants established earlier, for example the Jin Zhou plants JZ 9-3, JZ 25-1, JZ 21-1, and JZ 20-2, into the monitoring range of the DMS without undersea optical cable communication posed a big challenge for the company – one that the extensive Siemens portfolio of wireless solutions helped to overcome.



Overcoming harsh maritime conditions

Wireless communication networks must comply with stringent standards when it comes to applications in offshore platforms. These networks must ensure a constant flow of critical data in harsh marine environments with high levels of interference. In these conditions, a single communication failure can have a profound monetary or even human and environmental impact. "In these applications, an extremely reliable network is needed," says Tao Wenshuai, a network specialist within the Industrial Communication Group of Siemens.

A rugged solution

Liaodong implemented a solution with the Siemens RUGGEDCOM WiMAX portfolio, based on IEEE 802.16e including OFDMA technology, which is capable of transmitting high-speed data signals on multiple subcarrier frequencies simultaneously. The biggest advantage of OFDMA technology is that it is more robust against frequency-selective fading and narrow-band interference, making it suitable for high-speed data transmission in a multipath environment.

With the installation of Siemens wireless products, including RUGGEDCOM wireless terminals and RSN900NC switches, it was possible to integrate real-time data for units and transformers collected by platform power plants into the DMS. "In this case, after adding corresponding information for units and transformers to the DMS, Liaodong was able to monitor and manage units and transformers through the DMS system," adds Wenshuai.

Enabling cost optimization

Since going into service in April 2014, the wireless system connecting the four Jin Zhou platforms to the DMS system has performed reliably without packet losses. Its transmission distance, communication capacity, and transmission rate are all highly valued by Liaodong and the project integrator Shenzhen Xingjian Automation Company. According to the project design, the maximum field space between the platforms is no more than 69 km, with transmission distances of 28 km.

In addition, Siemens 4G industrial broadband wireless products have helped reduce application costs. "Base stations are able to operate in a stand-alone mode without the need to have an ASN (Access Service Network)-Gateway. Not having to use an ASN gateway simplifies the network structure and significantly reduces application costs," says the project manager of Shenzhen Xingjian Automation Company. "Compared with other microwave systems, the stability and transmission speed are significantly improved."*

* Source: „The Magazine for the process industries – 02/17“

Security information

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