Honeywell OneWireless Solution

Helps Qingdao Refinery Adapt Flow Meter Signal of Water Supply System Wirelessly

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Project Overview

Wired flow meters were used in Water Supply System of Qingdao Refinery for measurement. Measurement points are scattered, and cabling to control room was difficult, therefore data reading were obtained by manual inspection. To increase automation level, save labor cost, and to avoid inspection difficulties caused by factors such as weather, Qingdao Refinery utilizes industrial wireless technology to realize wireless collection of data from water supply measurement points, enabling centralized real-time monitoring.

Solutions:

Six flow meters are installed at north and south sides of office building. Existing flow meters output 4-20mA signals to wireless analogue input transmitters to realize wireless adaptation. Wireless transmitters communicate with multifunctional nodes, and integrate data into DCS via wireless network.

Communication of wireless network: multifunctional node M1 installed at top of control room building and multifunctional node M2 installed at top of office building form the wireless backbone network. The 6 wireless analog input transmitters installed at north and south sides of office building


communicate with multifunctional node M2 wirelessly. Multifunctional node M1 also functions as gateway to integrate data into DCS control system, using standard communication protocol Modbus RS485. Management software platform (server) is located at control room: for visualized monitoring of communication status of wireless network; support wireless transmitter online remote configuration; for diagnosis and safety management of wireless network;

On-site Implementation

Currently installation and commissioning of on-site wireless backbone networks are completed. The communications between gateway devices installed at top of control room building and multifunctional nodes installed at top of office building are good, as shown in the following diagram:
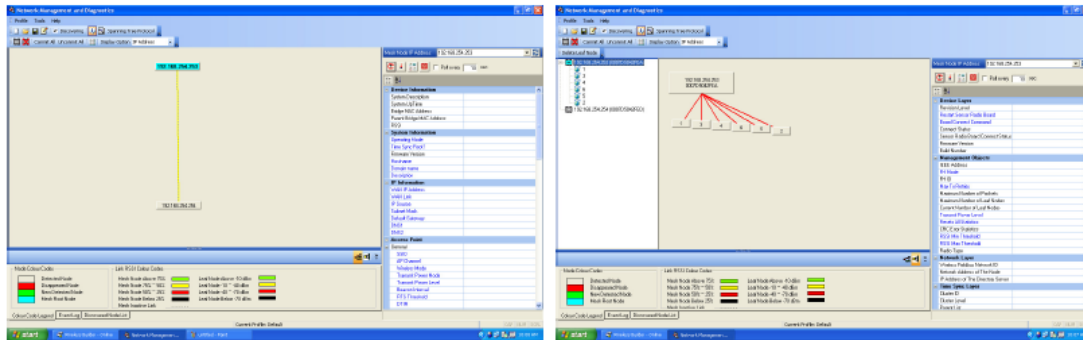
The six XYR6000 wireless analog input transmitters have been installed and commissioned, and have good communication with multifunctional nodes. After connection with 4-20mA signals, PV value can be read on the server normally, as shown in the right diagram:
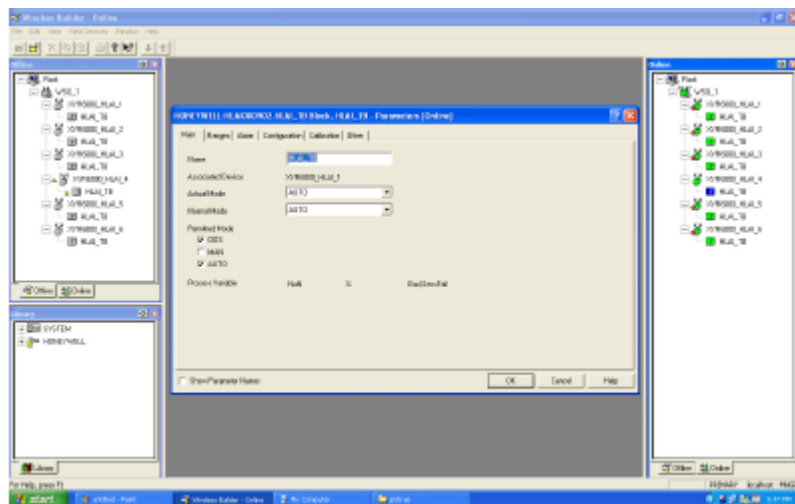
Multi-nodes and wireless transmitters are installed at lock poles at specific locations according to correspondent implementation specifications; all RF interfaces are undergone water-proof and dust-proof processing; lighting arresters and grounding terminals are installed at RF interfaces; 200V AC power supply is used for multi-nodes, and battery supply is used for wireless analog input transmitters; the following photos shown some examples of implementation:

Advantages of Wireless Technology

By using wireless analog input transmitter to realize wireless adaptation of 4-20mA signals, realization of data integration between wireless network and existing DCS system, and realization of real-time monitoring of water supply system flow by DCS, the following benefits can be obtained:

No need to layout cables and cable bridges etc., simple construction, without damage to existing infrastructure and roads in office area; saving installation cost and commissioning time. Besides, there will be fewer maintenance workloads in the future.

In addition, wireless network can be flexible scaled. If wireless backbone network to be extended to equipment area, it only needs to add multi-nodes according to requirements; if wireless measurement points need to be added around existing wireless network, it only needs to select suitable wireless instruments and install them to measurement points and perform authorization configuration; this may reduce future investment for network expansion greatly;

Long-lasting battery life also reduces maintenance cost in the future greatly. Currently, life of wireless transmitter with 1s refresh rate is about 4.5 year, saving labor cost and battery purchase cost for frequent battery replacement;

Intelligent wireless network, self organization, self-healing, automatic re-configuration, auto-repair network without human intervention, reducing the latter maintenance work, is a safe, stable, and reliable network. Wireless solution can also reduce later maintenance costs, without maintenance cable, bridges, junction boxes, and cards etc., no need to worry about communication problems caused by cable damage.

Learn more:
Fore more information about Honeywell wireless solution, please visit www.honeywell.com/ps/wireless, or contact with your Honeywell customer manager. www.honeywell.com/ps

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