Yokogawa ISA100 Application Examples

Event: ISA100 Wireless End User Conference
Location: SKF Houston, TX
Date: March 1, 2016
Presenter: Kevin Zamzow
Common drivers:

- Lack of communications, and often power, at desired measurement location
- Significant cost / time / weight savings vs. adding wired points
- Elimination/avoidance of tethers/slip rings for moving/rotating equipment
- Limited DCS I/O expandability and desire for “intelligent I/O”

Primarily monitoring

- Beginning to see wireless monitoring with wired control
Petronas – Offshore Platform Safety and Asset Mgmt.

- Zuhal unmanned, platform with minimal facilities located 130km offshore in the South China Sea, Sabah, Malaysia
- Sumandak platform is 5km away from Zuhal

This site was selected for the following reasons;
- On-going fast track project with minimal facilities
- No gas detectors installed on site
- Harsh offshore environment and weather condition
- Possibility to test the communication reliability over 5km distance offshore
Petronas – Offshore Platform Safety and Asset Mgmt.

ISA100 Wireless System Hardware

- Gateway: 1 pcs
- Access Point: 2 pcs
- Wireless Pressure Transmitter: 3 pcs
- Wireless Gas Detector: 3 pcs

- Repeater: 4 pcs
- High Gain Antenna: 4 pcs
- Antenna Extended Cable: 4 pcs
- FAST/TOOLS: 1 pcs
Petronas Gas Monitoring - Conclusion

The test has proven the capability of improving asset management and improving safety via wireless implementation.

- ISA100 wireless system remained interoperable and the communication remained robust and stable over the 5km distance in heavy steel multi-deck structure and the harsh offshore environment with monsoon, thunder storm and high tidal differences

- ISA100 wireless network installation and commissioning time is only 5% to 10% of that required for a conventional wired system – lower project cost

- ISA100 wireless implementation in offshore platform has proven to be beneficial in terms of safety, operational flexibility and cost saving as demonstrated during the testing period
Gas Fired Power Plant

Application
Analysis of Gas Turbine Performance
(Flow/Temp. for Vent & Combustion Air System)

Customer benefit
Digital Measurement of Key Parameters in the DCS
Achieved Monitoring of previously difficult to reach and un-monitored parameters
Eliminated Costly Conventional Instrumentation
Eliminated Need for operator patrols to obtain key parameters

Key Features
22+ Wireless Transmitters
Wired Transmitters ADAPTED to wireless technology using ADAPTORS
Low CAPEX Plant-wide Monitoring of Battery Rooms

**Application**
24 Battery Rooms monitoring in Gas Plant
Batteries for Emergency shut down
Temperature and A/C operation monitoring for batteries

**Customer benefit**
1 week commissioning & engineering
Reduce Capital Expenditure (Approx. 80% down)
One CCR can monitor 2 km² whole plant

**Key Feature**
Full redundant system
4 hops, max 1km communication

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Trinmar: Trinidad, Tobago - Offshore Oil Well Monitoring
Monitoring for Toxic Gas Dispersement

Goal:
- Auxiliary monitoring points at plant perimeter
- Not a safety application

Challenges:
- No power or communications at fence line
- No battery powered toxic gas detector

Solution:
- H$_2$S monitor
- ISA100 IO adapter with AI
- Battery backed solar to power gas monitoring
Pipeline Leak Detection – North Dakota
Refinery in Salt Lake City - Tank Level/Alarm
### Challenges:
- Long spans had limited pressure monitoring points for trouble shooting
- High cost to add additional monitoring points

### Solution:
- Add additional monitoring points to shorten trouble shooting span
- Use ISA100 pressure transmitters to reduce cost and save installation time
Mobile, Temporary Monitoring of Reactors

- Use mobile cart for temporary monitoring of multiple temperature points of polycrystalline reactor
- Cost savings vs. hardwiring all points
- ISA100 infrastructure covers reactor hall and mobile end device saves on number of transmitters required.
Steel Plant in Ohio: Blast Furnace Temperature Monitoring
Fractionation Research Institute

ISA100 network installed
Integrated to DCS
Members can see ISA100 in operation
www.fri.org
Thank you for your attention