Sep - Dec 2010 • Issue 22

FISHER IN CONTROL

CORPORATE NEWS

Emerson Innovation Center hosts nuclear power plant control valve experts

New Emerson Innovation Center serves as training venue for nuclear plant personnel

The new Emerson Innovation Centre in Marshalltown, Iowa, in the U.S. recently co-hosted a 2-day training session for the USA-STARS nuclear air-operated-valve (AOV) group.

Emerson's Vice President for Fisher nuclear valve products, Bill Fitzgerald emphasized that the Emerson Innovation Center with its focus on Fisher technology would give participants an unmatched opportunity to learn about and to watch the latest Fisher control valve developments in action.

Terry Buzbee, president of the Emerson Fisher valve division said that the Emerson Innovation Center is home to the world's largest "flow lab" which for the first time enables large valves to be tested in real-world plant conditions to ensure production reliability, efficiency, environmental compliance, and safety before valves are being installed at a customer site.

Fisher control valves are installed in more than 90 percent of the world's nuclear facilities.

About USA-STARS

Utilities Service Alliance (USA), Inc., is a "fleet" of numerous nuclear power sites, owned by different corporations that have joined together primarily to reduce operating and maintenance costs, but also to improve site performance and to influence nuclear industry activities where appropriate. Within the alliance is the Strategic Teaming and Resource Sharing subgroup known as STARS.

To ensure that the many air-operated valves (AOV) utilized within the nuclear power industry operate as designed, are tested and then maintained appropriately, the AOV team focuses on joint procurement of test equipment and engineering services, development of consistent testing procedures and shared expertise to increase the reliability and improve the operational performance of air-operating control valves and instruments.

FISHER®

EMERSON™ Process Management

Emerson introduces Fisher® Fieldbus digital level controller

FIELDVUE™ DLC3020f provides easy access to information that enables accurate control with less downtime

Emerson Process Management's Fisher® FIELDVUE™ DLC3020f fieldbus digital level controller provides new levels of performance and information access to help users improve operations.

In addition to displacement sensor technology for measuring liquid level or the level of interface between two liquids, the DLC3020f uses the digital FOUNDATION fieldbus communication protocol to deliver diagnostics, alerts, and other information that helps users improve performance while avoiding unexpected downtime.

Digital communication also makes it easy to configure, calibrate, and test the DLC3020f using Emerson's AMS Suite software or 475 Field Communicator, and to integrate the instrument with new or existing control systems.

Guided setup and calibration leads the user through the instrument setup, process fluid selection, and calibration in an easy-to-use format. The capability to easily select and define process fluids allows on-the-fly fluid changes for batch or continuous applications without calibration, saving time and recalibration costs.

The instrument stores up to 30 logs including calibration, instrument setup, and process fluid data that can be saved for future reference or re-use. Advanced electronics provide increased performance and reliability, and process fluid temperature can be used when needed for density compensation to maintain process-variable accuracy.

The DLC3020f is designed to directly replace pneumatic, analog, or HART® transmitters/controllers. To provide additional flexibility, it can be mounted on a wide variety of Fisher 249 cageless and caged level sensors as well as on other displacer type level sensors through the use of mounting adaptors.

Emerson's business partners pledge commitment to uphold strong Fisher's heritage, values and spirit

Emerson's constant renewal and reinvention are keys to success

The top management of Fisher Valves and its regional Local Business Partners (LBPs) convened in Singapore at St Regis for a 2-day A-P Sales Leadership Summit on November 18 and 19, 2010. Against the backdrop of the ever changing and often unpredictable business climate, the biennial (once every two years) top level business meeting was a quest for innovative products, people and strategic solutions to the challenges ahead. It was also part of Emerson's continual bid to review, renew and reinvent itself so as to offer the best business expertise and technologies to customers.

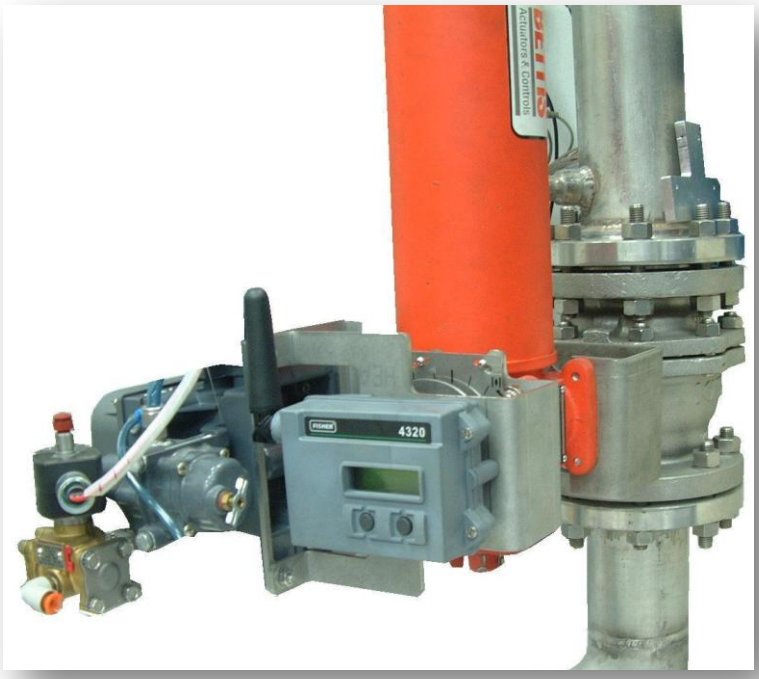
One of the highlights of the Summit was a signing ceremony in which these business partners pledged their commitment to Fisher's heritage, values and spirit, all of which were encapsulated in a plaque. The Fisher heritage has been the bedrock of the organisation's amazing journey and success for the last hundred and thirty (130) years.

Wireless Product Demo

There are safety applications where the operator requires both a DVC and a redundant position feedback to be mounted on the same SIS Valve.

In such applications, the 4320 is preferred over the THUM. If a THUM is used, the position of the valve cannot be ascertained when there is a lost of input signal. With no external power required, the 4320 is a truly redundant position feedback.

To demonstrate the possible mounting for such requirements, the 4 inch SIS valve in the Performance Loop has been fitted with both a DVC6020 and 4320 wireless position monitor.



Many on/off valves are in manual control and the process technician had to make daily visits to verify the position of these valves. This is especially so in applications where these valves control effluent discharge and environmental regulations call for an improvement in the reliability of the results and for these measurements to be easily stored and be made readily available for inspection. The cost of installing traditional measuring instruments is prohibitive, as these valves are usually far away from the control room. With Emerson wireless technology, a solution enabling online measurement is now economically feasible. To demonstrate the ease of implementing the wireless position monitor, all manual on/off valves in the Performance Loop are now fitted with either a 4310 or a 4320.

To demonstrate the ease of implementing the wireless position monitor, all manual on/off valves in the Performance Loop are now fitted with either a 4310 or a 4320. Eleven video clips taken in the Performance Loop, on various aspects of the 4300 - from mounting positions, powering up, setting network ID to calibration - were compiled. The video clips were embedded in a powerpoint file that runs automatically. The entire file is made modular, so that any slides could be edited, deleted or any of the video clips updated.

Fisher Control-Disk™ valve reduces process variability and improves product quality in Chinese chemical plant

A chemical plant in Jiangxi China is well-known for its fumed silica products that are used in applications ranging from spark plugs to printing inks. The plant's products have a high degree of purity which gives rise to excellent performance.

The plant's main concern was therefore its end product quality and consistency. It was experiencing high variability problems caused by the flow of the combustion air feed line. Investigations revealed that a valve with a wide control range is needed to execute precise control and regulate high flows. The Fisher Control-Disk™ - two NPS6 with positioners 1052 and DVC 6020 were offered as the solution, replacing the plant's existing valve from another supplier.

The end result was a huge 25% improvement in process variability (PV). The Fisher Control-Disk™ valve has proven once again to be the most economical way to improve process control over a wide control range.

Capacity improvement in propylene compressor using Fisher® Optimized Antisurge Valve

Fisher optimized antisurge valves are an engineered control valve package specifically designed for compressor antisurge applications.

A major producer of oil and gas, petroleum refining and marketing, petrochemiclas and textiles has a large manufacturing complex consisting of a naptha cracker feeding downstream fiber intermediates, plastics, and polyester plants.

The cracker was designed as a 750 kilo-tons annually(KTA) unit in 1997 that ultimately achieved a capacity of 830 KTA. A de-bottleneck project was undertaken to increase its output to 875 KTA. To achieve this, the furnace capacity was increased and the cracked-gas turbine was up-rated from 43 MW to 50 MW.

These changes required more refrigeration capacity from the existing propylene refrigeration compressor, a four-stage unit that was running very near to the stonewall limit. The turbine, however, had additional power available for the increased load.

It was decided that the compressor rotor be up-rated without making changes to the casing for an estimated seven percent capacity increase. This would require the upgrade or replacement of existing Fisher compressor anti-surge valves due to increased flow rates.

The biggest challenge was getting the additional capacity out of valves that were already designed to the upper end of their capacity. Replacement of the valves would result in significant additional removal and installation costs.

Fisher's solution, the antisurge valves on a four-stage propylene compressor that were used resulted in: the following benefits

- Improved compressor performance, resulting in a naptha cracker capacity increase of 8.4%.
- a more stable response for better controllability, reliability, and reduced startup time.

Tank Farm Wireless Application Discussion

Customers are gradually getting more receptive to this revolutionary leap in process control technology. There has never been so much excitement since the introduction of the FIELDVUE instrumentation in 1994.

As we increase the number of installation sites, it is an opportune time now to share with others how Emerson harnessed the power of wireless to solve customer pains, increase uptime, improve productivity and enhance safety.

Figure 1 shows rainwater being drained to the centre of the roof into the water trap of the External Floating Roof (EFR) tank installation. The water trap is fitted with a flexible pipe running through the inside of the tank. The bottom end of the drain pipe is connected to an outside manual drain valve-A as shown.

Overview

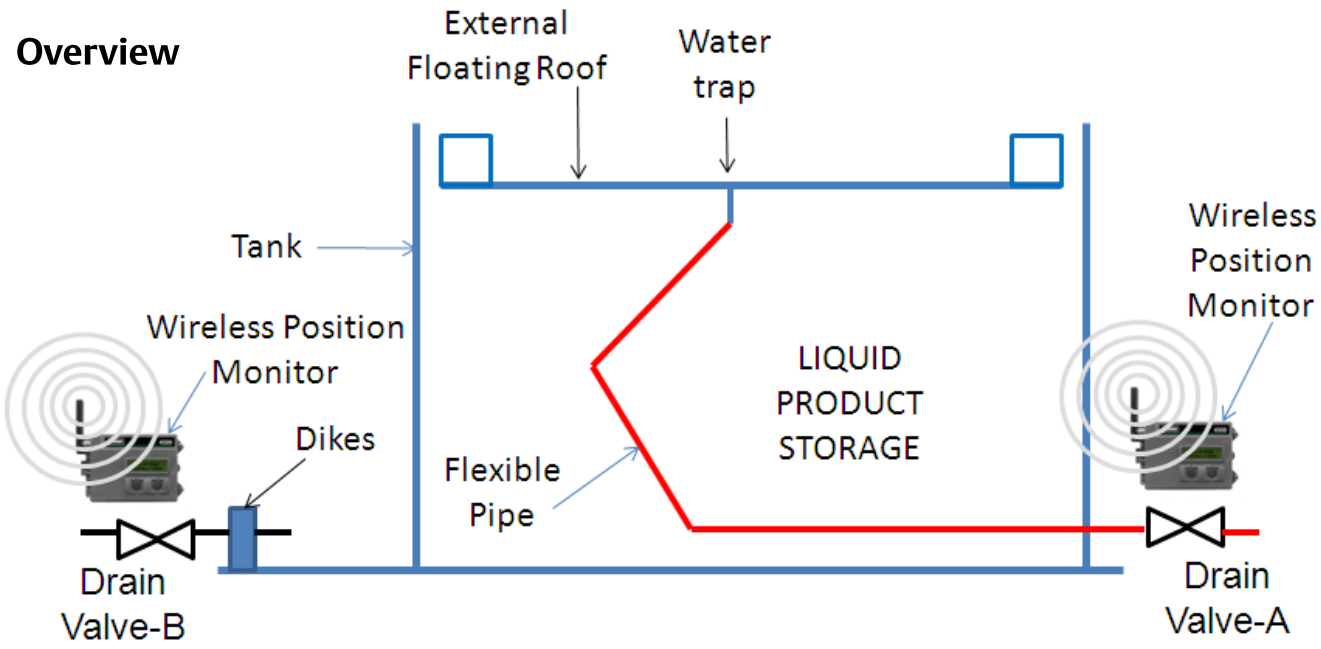


Fig. 1 Simplified External Floating Roof Tank Installation

Figure 1 above shows rainwater being drained to the centre of the roof into the water trap of the External Floating Roof (EFR) tank installation. The water trap is fitted with a flexible pipe running through the inside of the tank. The bottom end of the drain pipe is connected to an outside manual drain valve-A as shown. This is normally left open. It is essential to prevent the EFR from sinking into the liquid product in the tank when there is heavy rain. In order to contain any discharge from the tank, dikes or some retaining walls are built around the storage tank. There are some manual valves-B around the dikes and these valves have to be kept closed.

Challenges

- Environmental Regulation, Safety and Security
  The plant operator periodically conducts visual inspections by making a complete walk-through of the facility to check for tank damage, leakage, stained soil, excessive accumulation of water in the dike area. It is important to check the position of the valves as well. It is good to be able to remotely monitor the position of all the manual valves to be sure that nobody has meddled with them. The walk-through of the facility is time-consuming for a large tank farm.

- Tedious clip-board data collection as paper records
  As a standard operating procedure, the paper records of site inspections have to be kept for audit purpose. This is to ensure that the dikes, which act as a safety protection layer will still function when needed.

Tank Farm Wireless Application Discussion

Solution

With the introduction of WirelessHART technology since 2008, the solution for monitoring of manual valves in a remote area of the plant site comprises the Model 1420 wireless gateway and the Model 4300 wireless position monitor.

MODEL 1420
Wireless Gateway
(Installed in zone 2)

MODEL 4300
Wireless Position Monitor
(Installed on valve actuator)

Benefits

Increased Operator Safety and Productivity
The operator does not have to make unnecessary trips to the fields during a thunderstorm to make sure that the Drain Valves-A is opened. Usually there are many tanks at the site and it takes much time to travel from one tank to another. With the implementation of wireless monitoring of these valves, the operator can use his time more productively and also reduces his risk of being exposed to lightning in a heavy thunderstorm.

Remotely confirm manual valves position status
The implementation of the 4300 Wireless position monitor in one central location will give a better sense of control of the integrity of each and every manual valve position that is related to risk reduction/ mitigation. All the manual valve position can be logged into a data historian and can be easily retrieved for audit purpose or during emergencies.

Tank Farm Process Security
Tank farms are normally situated on the periphery or remote area of the plant. With wireless monitoring of the manual valve position, the operator can now be sure that his valves at the tank farm have not been meddled with and all are in the correct position as required by the site operating procedure.

Easy implementation of the Model 4300 Wireless Position Monitor
- The Model 4300 wireless position monitor has a power module that is long lasting.
- The 4300 is an intrinsically safe design.
- It connects to a self-organizing network which supports 100 devices @ 8 sec updates rate.
- Local LCD display also provides the valve position status.
- Valve open/ close alert status could be set and monitored continuously 24/7 instead of periodic manual inspections.

Emerson gears up for China nuclear market

On September 19, 2010, Emerson took part in a 3-day nuclear exhibition in Beijing.

In response to China's rapid development in nuclear power technology, Emerson showcased the new Fisher nuclear control valves that were developed to the third generation Westinghouse AP1000 design; the ASME Section III globe control valves (PV14), the Pressurizer Spray control valves (PV63) and the Passive Residual Heat Removal control valves (PV20).

More than 200 industry specialists visited the booth. This is the first time the visitors witnessed the technology of the Fisher nuclear control valve. An accreditation was also accorded to Emerson by the exhibition organizing committee recognizing us as "the industry's most closely watched" company.

This event has given Emerson the opportunity to position Fisher Valves as a leading player in the China nuclear control valve market.