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FISHER IN CONTROL

CORPORATE NEWS

Emerson and LUKOIL sign multi-year agreement to modernize automation at several refining and petrochemical facilities

Emerson Process Management and LUKOIL Group, one of the world's largest private oil companies, have signed an agreement to modernize 13 refining and petrochemical facilities in Russia and Eastern Europe.

Under the agreement, which extends through 2014, Emerson will provide equipment, software, and services as part of LUKOIL's enterprise-wide strategy to modernize process automation at their oil and gas refineries, petrochemical plants, and related facilities. LUKOIL operations to be upgraded include Stavrolen and Saratovorgsintez in Russia, Neftochim Bourgas in Bulgaria, ZAO Lukor in Ukraine, and Vars in Latvia, as well as additional facilities in Romania; in Ukraine's Odessa; and in Russia's Perm, the Volgograd region, and the Komi Republic.

"Modernizing these facilities using Emerson's advanced technologies and services will enable us to improve product quality and reduce environmental impact right away — and gain a significant advantage over our competitors in the future," said a LUKOIL representative. "The upgraded automation is also expected to help LUKOIL improve process performance, increase production of high-quality diesel fuel, and balance refining output with oil production."

LUKOIL chose Emerson because of the two companies' successful experience in cooperating on previous projects, as well as Emerson's technologies and full scope of design, training, installation supervision, start-up, and commissioning services. The LUKOIL facilities being modernized will be upgraded to Emerson's Plant Web™ digital automation architecture with Smart Wireless technology. The architecture includes DeltaV™ digital automation systems, DeltaV SIS™ process safety systems, and AMS™ Suite predictive maintenance software, as well as Fisher® control valves, Micro Motion® Coriolis flow and density meters, and Rosemount® measurement instruments.

"Our proven ability to implement comprehensive but easy-to-use automation solutions will enable us to help LUKOIL realize its strategic objectives," said Steven A. Sonnenberg, president of Emerson Process Management. "We have enjoyed a strong relationship with LUKOIL for several years and look forward to helping them further improve the performance of these facilities."

FISHER®

EMERSON™
Process Management

Emerson forms human-centered design institute to drive ease of use in product development

Reversing the Master / Servant relationship between technology and people will reduce product complexity and improve productivity

Signaling an important change in technology trends, Emerson is making process control technology easier to use with its introduction of the Human Centered Design Institute. This announcement back in the last quarter of 2009 was a culmination of more than five years of customer work-practice analysis, new product development re-engineering, and organizational training. The goal is simple: to make products that are not only reliable, compatible and cost-effective, but also bring about a significant improvement in ease-of-use and workforce productivity.

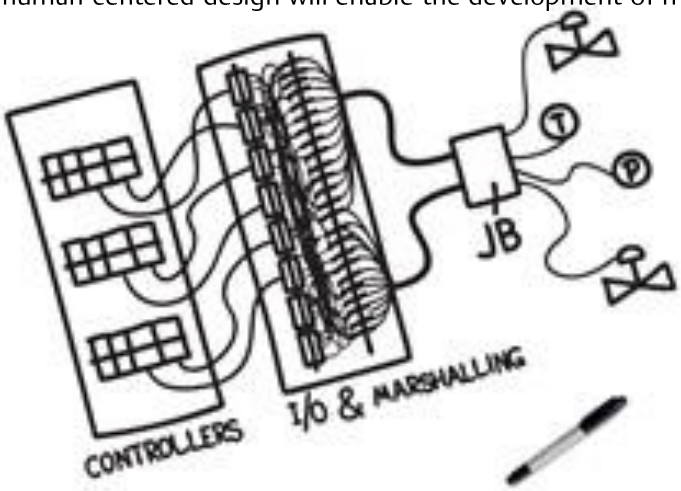
"Process control technologies have come a long way in the past 40 years," said Peter Zornio, chief strategic officer at Emerson. "But the industry has invested almost exclusively in feature and technology enhancement, instead of designing around how people actually use the technology. We believe it's time technology began serving people, instead of the other way around."

The primary goal of Emerson's Human Centered Design Institute is to ensure that user work practices and improved task completion (usability or workforce productivity) are at the heart of every new product that Emerson introduces.

"The industry faces a demographic paradox. In mature markets, knowledgeable workers are retiring. In emerging markets, finding knowledgeable and skilled workers is very difficult. By putting increased emphasis on ease-of-use, we can meet this demographic challenge head-on and simply make it easier to extract value from technology investments." said Zornio

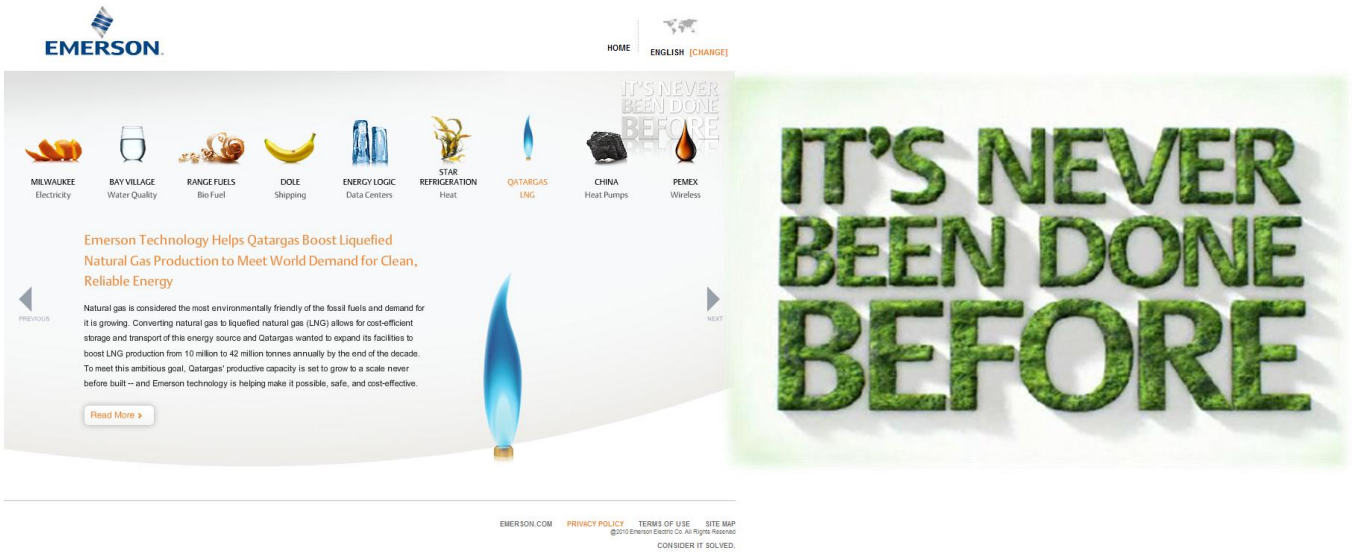
Human Centered Design is a multi-disciplined science. Intensive observational research, usability testing, and heuristics analysis are key elements of the practice. "Getting inside the heads of users, understanding how they interface with each other and technologies, is the foundation of Human Centered Design," said Duane Toavs, Director of the Center. "We also need to understand how product designs affect productivity."

Emerson's investment in HCD represents a major commitment toward taming the complexity inherent in new products. It's an important commitment. Ultimately, a focus on human centered design will enable the development of more useful and usable solutions



Emerson Brings Four New 'Never Been Done Before' Stories To Its Award-Winning Advertising Campaign

New Wave Of Innovative And New-To-The-World Solutions Featured In Multilingual Broadcast, Print, Digital, And Airport Ads Worldwide



Building on its 2009 award-winning "It's Never Been Done Before" advertising campaign, Emerson (NYSE: EMR) continues to highlight its innovation and engineering expertise with the release of four new ads spotlighting the company's high-stakes customer solutions.

"Our new ads continue the bold, creative look and optimistic message that was so successful last year in drawing attention to the innovative and effective solutions Emerson offers customers for their most difficult challenges around the world," said Kathy Button Bell, vice president and chief marketing officer for Emerson. "This year, we are increasing our advertising investment in key emerging markets for Emerson, especially in the Middle East, India, China, Mexico, and Brazil." The first flight of the campaign creative, which runs through May, includes newspaper, magazine, TV, Internet, and airport digital boards and dioramas. The ad placements will include:

- TV: CNBC, Bloomberg Local Business Reports, Fox News, Fox Business Channel, and The Golf Channel
- Print: The Wall Street Journal
- Digital: BBC, CNN International, The Wall Street Journal, Tidal TV, JiWire, and The Golf Channel
- Mobile: The Wall Street Journal Mobile Reader
- In-flight video on American Airlines and airport advertising in New York, Los Angeles, Miami, Chicago, San Francisco, and Dallas-Ft. Worth.

Outside North America, the ads will run in Europe, Mexico, Brazil, India, the Middle East, Japan, and China.

In 2009, BtoB Magazine named Emerson's "It's Never Been Done Before" campaign the runner-up for the "Best Integrated Campaign." To watch Emerson's TV ads, visit www.YouTube.com/Emerson.

For more information about the new campaign, to read stories about the case studies highlighted in the ads, and to view select creative, please visit www.Emerson.com/NeverBeenDone

Emerson honoured again in industry publication, CONTROL magazine's 2010 Readers' Choice Awards

Readers'Choice Awards

In CONTROL magazine's 2010 Readers' Choice Awards, automation users once again honored Emerson Process Management with top ratings in more categories than any other company.

To which we reply, "Thank you." It's gratifying to know that our technologies and services can help so many of you improve the efficiency and profitability of your operations.

Continuous Regulatory Control

★	Emerson Process Management
2.	Honeywell Process Solutions
3.	Rockwell Automation
4.	Siemens Industry
5.	Yokogawa
6.	Invensys Operations Management
7.	ABB
8.	Schneider Electric

Batch Process Automation

★	Emerson Process Management
2.	Rockwell Automation
3.	Siemens Industry
4.	Honeywell Process Solutions
5.	Invensys Operations Management
6.	ABB
7.	Yokogawa
8.	GE Intelligent Platforms

Safety/Emergency Shutdown

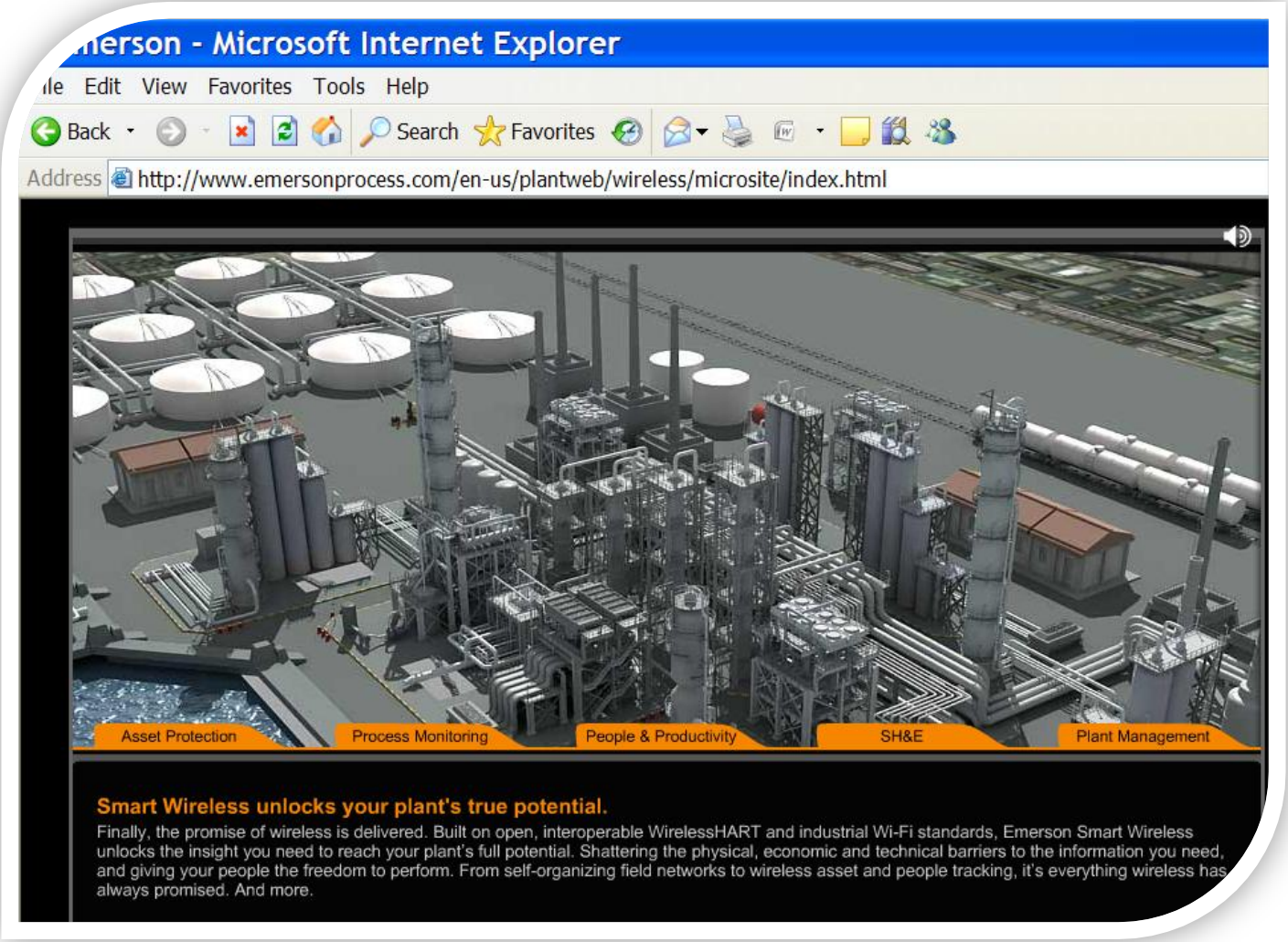
★	Invensys Process Systems (Triconex)
2.	Rockwell Automation (ICS Triplex)
3.	Emerson Process Management
4.	Siemens Industry
5.	Honeywell Process Solutions
6.	HIMA
7.	Yokogawa
8.	Pilz International

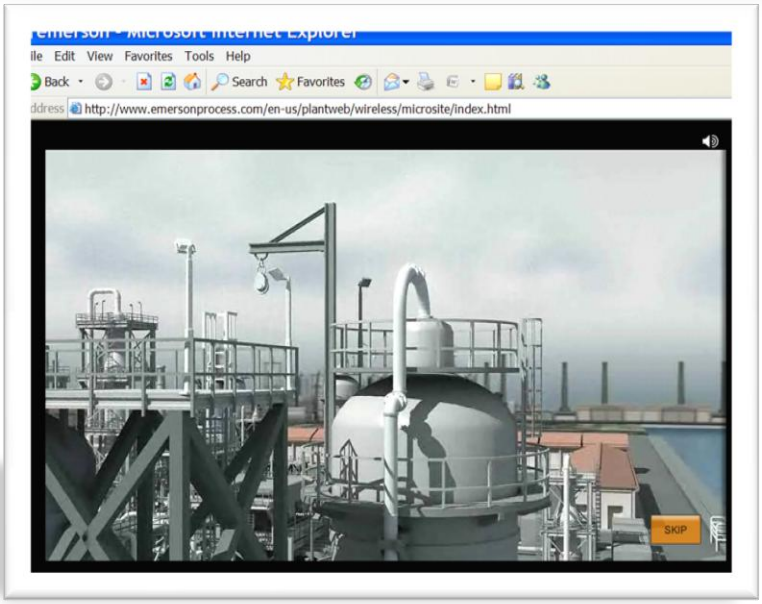
Sequential Logic Control

★	Rockwell Automation
2.	Siemens Industry
3.	Emerson Process Management
4.	Schneider Electric
5.	GE Intelligent Platforms
6.	Honeywell Process Solutions
7.	ABB
8.	Yokogawa

Table I. "Best in Control" Readers Choice Awards by Process Automation Discipline

Emerson unveils online wireless interactive tool



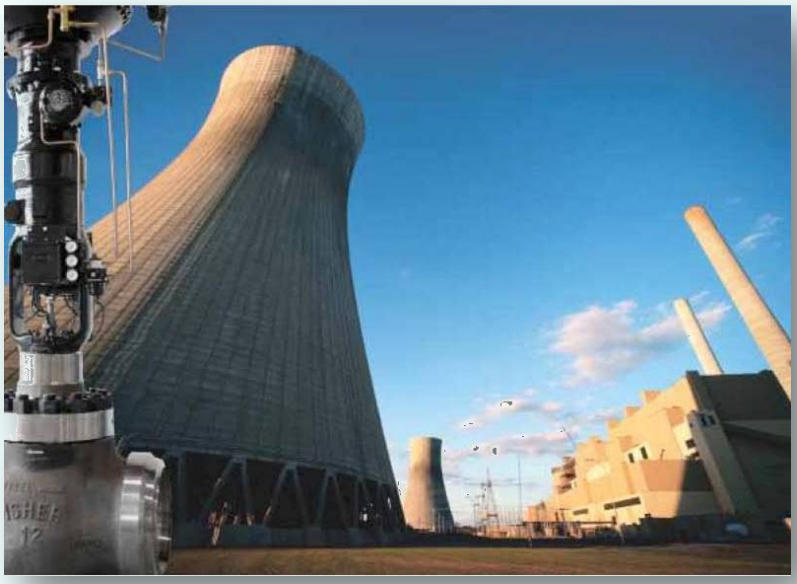


Now you can see how wireless works in your plant. To know more about Emerson smart wireless, visit:

http://www.emersonprocess.com/en-us/plantweb/wireless/microsite/index.html

Emerson's FIELDVUE™ digital valve controllers help nuclear plant avoid unplanned shutdown and save millions

Diagnostic technology helps Wolf Creek Generating Station extend life of critical control valves Through normal refueling cycle



The Wolf Creek Generating Station, Kansas' only nuclear power plant, recently used Emerson's Fisher® FIELDVUE™ digital valve controllers to extend the life of critical control valves. This action avoided a potential unplanned shutdown that in a plant this size could cost up to $1 million per day in lost revenue.

Operating since 1985, the Wolf Creek plant produces electricity for more than 800,000 homes near Burlington, Kansas. FIELDVUE DVC6000 Series instruments with Performance Diagnostic capabilities are used in combination with AMS™ ValveLink™ software to monitor critical valves in the plant's feed water system. The instruments and software provide online, real-time data about the valves' position and condition, including variables such as valve packing friction. This performance data is easily documented and trended over time, enabling plant operators to diagnose problems and to plan and prioritize valve maintenance.

This capability proved its value after operators noticed an accumulation of graphite dust on the packing flange of a feed water regulator valve, which indicated a problem. Packing friction acts to stabilize the valve and keep its plug from vibrating or "chattering," which can accelerate packing failure. Loss of friction on these critical service valves could lead to a plant trip or unscheduled shutdown at any time.

The maintenance crew discussed how to keep the valve operating until the plant's next scheduled outage for refueling, almost 18 months later. The team decided to inject leak sealant into the packing while the valve remained in service. The sealant would extend the life of the packing and enable the valve to continue operating. The injection process would require careful monitoring, however, because the sealant might also affect packing friction. Too little friction and the valve would continue to leak and chatter. Too much friction and the valve could lock up.

Justin Keim, Supervisor of Engineering at Wolf Creek, said this on-line repair process would not have been possible without the FIELDVUE instruments. "The FIELDVUE DVC6000 positioner's accurate measurement and monitoring capabilities enabled us to maintain system stability while packing friction dropped from 500 pounds to zero during the sealant injection," he said. "The FIELDVUE instrument's fast response kept up with the changing friction load, in spite of the valve's heavy chatter."

Keim said the team would not have attempted this project using the old pneumatic positioner that the digital valve controller replaced. "On-line valve diagnostics via FIELDVUE instruments enabled our personnel to document drive signal, valve position, and packing friction levels throughout the injection process," he said. "The valve remained in service the entire time, and we avoided a potentially costly plant shutdown."

"He added that two other feed water regulating valves with the same problem were subsequently repaired using the same method and diagnostic tools. The work helped the plant avoided a costly unplanned shutdown.

Fisher valves are installed in over 90% of the world's nuclear facilities. Emerson also makes Rosemount® measurement instruments and Ovation® control systems that are used in nuclear power plants.

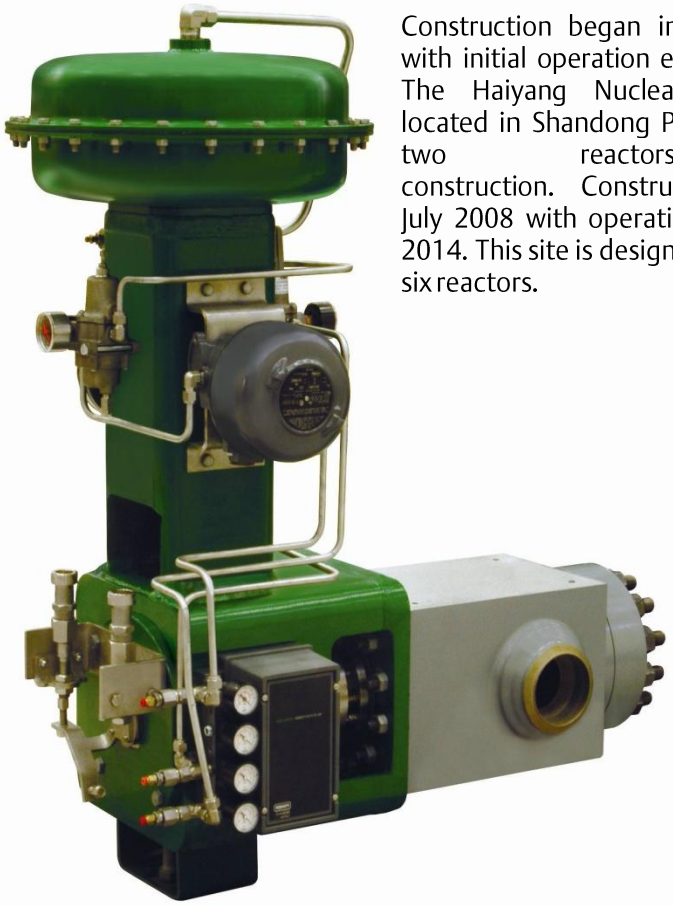
Emerson to supply Fisher® control valves for Westinghouse AP1000™ nuclear power plants

Fisher valves will be used in the critical pressurizer spray system to help maintain reactor coolant temperature

Emerson Process Management has been awarded approximately $2 million in contracts to provide its Fisher® control valves for Westinghouse Electric Company's newest generation of nuclear power plants. The contracts cover Westinghouse AP1000™ nuclear plants to be built in both China and the United States, and agreements are in place to cover an additional $3 million for more plants expected to be built in the United States.

Westinghouse chose Emerson based on its nuclear valve experience and proven control valve designs. Emerson's Fisher SS84 valves are used in the AP1000 plants' pressurizer spray system, which helps to maintain reactor coolant temperature. The SS84 valves are updated models designed to provide even easier maintenance and longer service life.

The first use of the valves will be in new AP1000 nuclear plants under construction in China. The Sanmen Nuclear Power Plant, located in Zhejiang Province, will have two reactors in its first stage of development, but the site is designed to handle as many as six reactors.



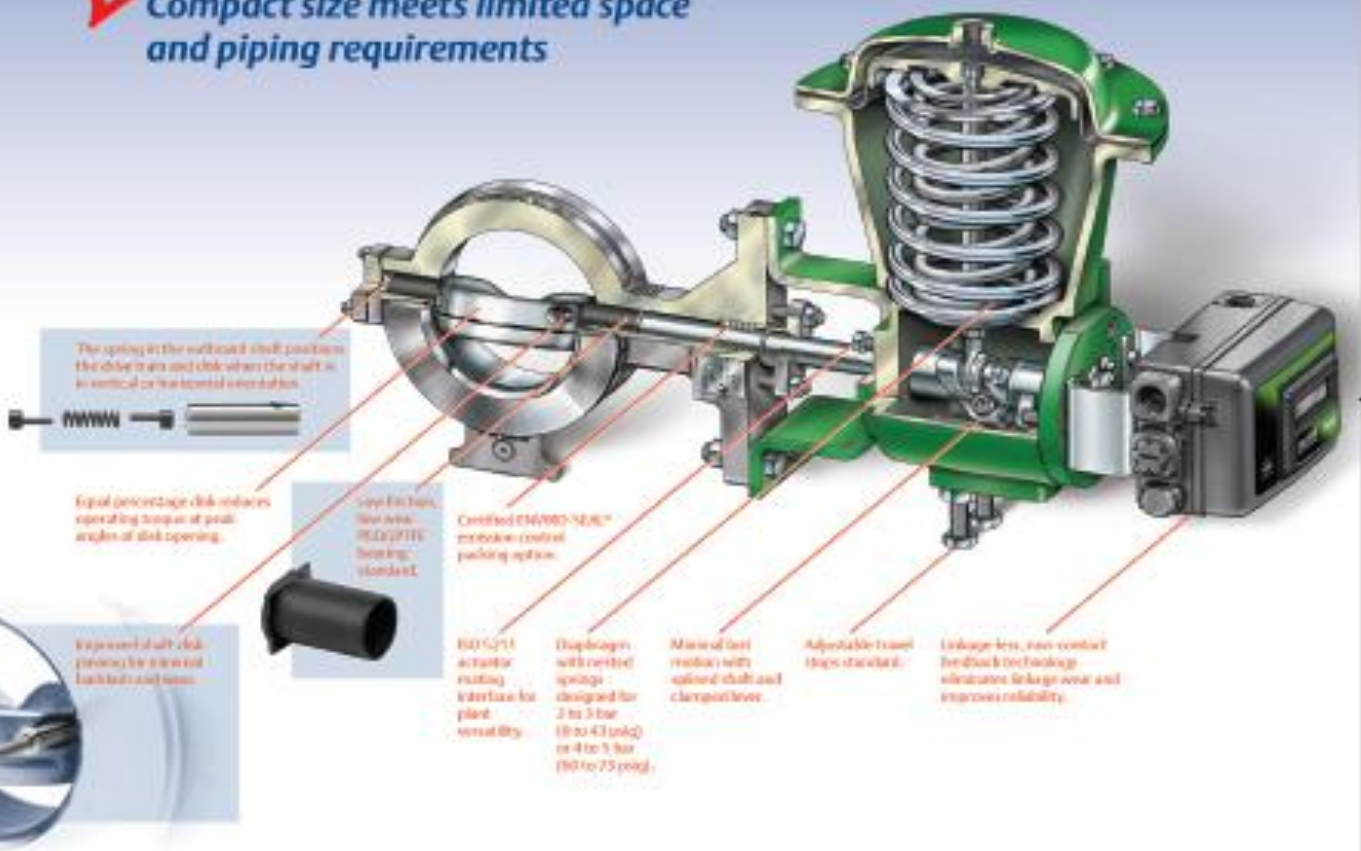
Construction began in February 2008 with initial operation expected in 2013. The Haiyang Nuclear Power Plant, located in Shandong Province, also has two reactors under construction. Construction began in July 2008 with operation scheduled for 2014. This site is designed for as many as six reactors.

About Emerson's Nuclear Valve Experience

For over 35 years, Emerson has supported nuclear facilities worldwide with Fisher nuclear valves and associated services. In fact, Fisher valves are installed in over 90% of the world's nuclear facilities. To date, thousands of ASME Section III N-Stamped and RCCM process control valves have been installed around the globe.

Fisher® Control-Disk™ Valve

- Excellent throttling control in the 15 to 70 percent travel range
- Meets API, ASME, and EN standards, making it suitable for use in all world areas
- Compact size meets limited space and piping requirements



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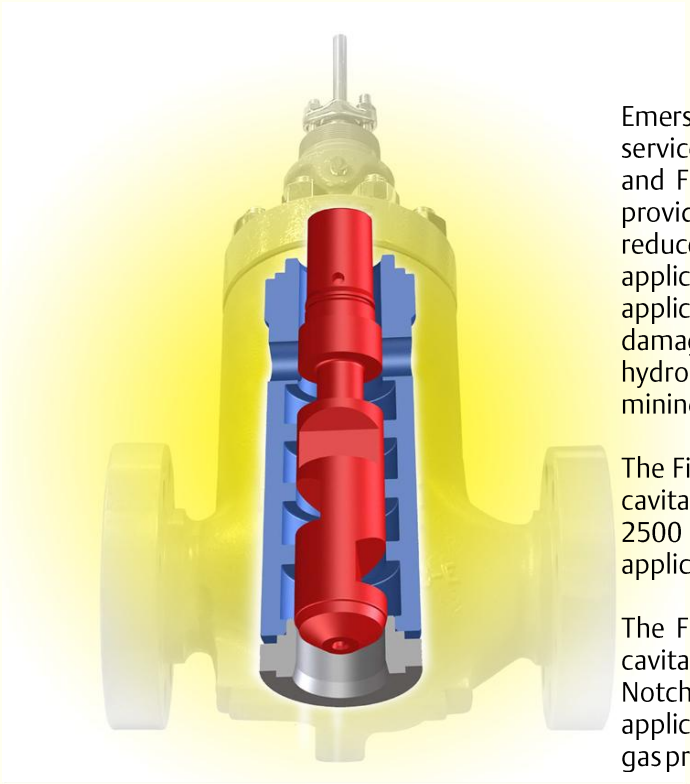
Emerson expands dirty service control valve solutions

Expanded Fisher® line offers cavitation control for a broad range of severe service applications



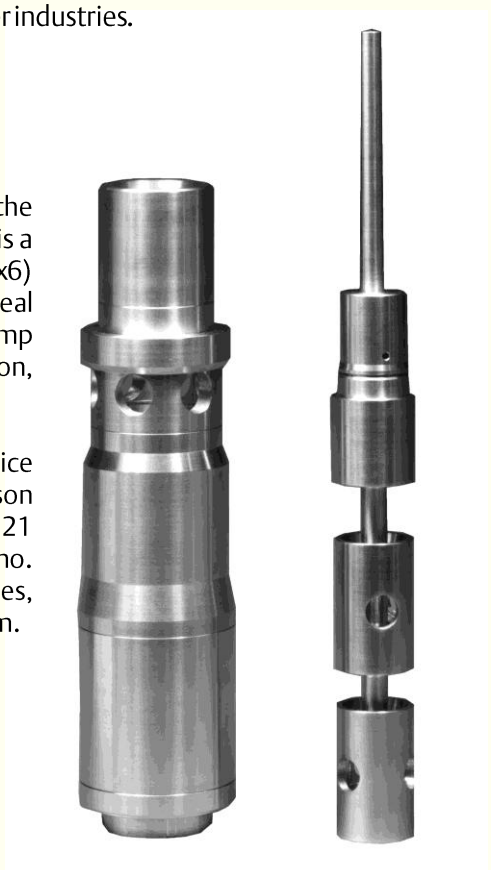
Emerson Process Management has expanded the line of Fisher® dirty service control valve solutions to include the NotchFlo™ DST valve and Fisher DST Trim. With the expanded line, Emerson is able to provide specific solutions that both increase process availability and reduce maintenance costs for a broad range of severe service applications. The line-up offers excellent cavitation control for applications known to contain entrained particulate that would damage standard trim components and can be used in the hydrocarbon, power, chemical, pulp and paper, and metals and mining industries.

The Fisher NotchFlo DST valve is a multi-stage (3, 4, or 6 stage) anti-cavitation valve available in Class 300 – 1500 Globe and Class 600 – 2500 Angle (NPS of 1-8) that can be used in severe service applications.

The Fisher DST Trim is a multi-stage (2, 3, 4, 5 or 6 stage) anti-cavitation trim available in Class 300 – 2500 (NPS of 1-16). Both the NotchFlo and DST are frequently used in high pressure drop applications up to 4200 psi (290 bar) in the chemical, refining, oil and gas production, and power industries.

In addition to the expanded line-up of Fisher dirty service control valves, the Fisher Cavitrol™ III Trim with Improved Sealing Technologies is available. It is a multi-stage (2 or 3 stage) trim available in Class 900 – 2500 (NPS of 1 - 8x6) that can be used in severe service applications where plug tip erosion and seal wear are issues. The Fisher Cavitrol III Trim is frequently used in pump recirculation and startup systems in the power, process, oil production, chemical refining, and other industries.

For additional information on the expanded line-up of Fisher dirty service control valves, go to www.fishersevereservice.com or contact an Emerson Process Management sales office and request product bulletins 80.2:021 Fisher DST Trim, 80.2:022 Fisher NotchFlo DST Trim and brochure part no. D351643X012 Fisher Cavitrol III Trim with Improved Sealing Technologies, D351183X012 Fisher DST Trim and D351185X011 Fisher NotchFlo DST Trim.



Emerson introduces FIELDVUE™ DVC6200 digital valve controller with linkage-less, non-contact feedback technology

New Fisher® instrument is available in an explosion-proof package and with HART or FOUNDATION fieldbus protocols

Emerson Process Management has expanded its FIELDVUE™ instrument product line with the DVC6200 Series digital valve controller, featuring linkage-less, non-contact feedback technology.

The FIELDVUE DVC6200 instrument was designed for applications that experience high levels of vibration, corrosion, or material entrapment. The linkage-less, non-contact feedback technology improves reliability by eliminating linkage wear.

The FIELDVUE DVC6200 instrument has undergone electro-magnetic compatibility (EMC) testing to meet IEC standards and will ship with the CE mark. It is available with either the HART or FOUNDATION fieldbus communication protocol.

Orica Mining Services put the new device to work in its Kooragang Island facility in New South Wales, Australia. Orica, a leading supplier of commercial explosives and blasting systems for the mining and construction industries, is a long-time user of Emerson Process Management products. The Orica facility at Kooragang Island is the second-largest in the world producing ammonium nitrate.

The Kooragang site has standardized on Fisher® valves with FIELDVUE instruments. The plant also uses Emerson's 375 Field Communicator and AMS™ Device Manager with ValveLink™ SNAP-ON™ application software as part of its calibration, valve-monitoring, and predictive maintenance system.

Orica personnel worked with the local Emerson office to improve the performance of a Fisher valve in liquid ammonia service. The valve's high-cycle service conditions and the ammonia atmosphere in which it operates represent one of the most severe environments in any process plant. Emerson engineers recommended the new FIELDVUE DVC6200 instrument with linkage-less, non-contact feedback technology for this harsh application.

Using basic hand tools, Orica's Instrument Technician Richard Fielding installed the new FIELDVUE DVC6200 instrument on an ammonia-service valve. "This device was easy to install, program, and set up," he said. "It has been operating trouble-free and has enabled this critical valve to provide accurate and repeatable response throughout its range of travel."

Fielding said he appreciates Emerson's continued investment in technology and product enhancements. "The reliability of the FIELDVUE DVC6200 instrument, plus its on-line monitoring capabilities, enables our operators to avoid manual checks and valve repairs in areas filled with ammonia vapors," he said.

Since installing the device, Orica has not experienced any production losses due to valve failures. "This single instrument application has saved us thousands of dollars," Fielding said.

Orica plans to order 30 Fisher valves with FIELDVUE DVC6200 instruments for an upgrade at its Kooragang ammonia plant.

For more information about FIELDVUE instruments and diagnostic capabilities, visit www.FIELDVUE.com.

Possibility of getting valve diagnostics using a wireless network

The traditional way of getting HART information and valve diagnostics is using the HART multiplexers installed in the marshalling cabinets. It involves much wiring and marshalling cabinet space. It also concerns having more man-days to install and to get the wiring drawing ready for implementing this wired network.

A much neater solution is to use the Smart Wireless THUM adapter which is a device for use on HART instrument such as Fisher FIELDVUE digital valve controller (DVC6000 and DVC2000). The THUM adapter adapts the wired HART protocol to the WirelessHART™ protocol.

Using the THUM adapter, one at a time, it can be installed on the DVC6000 if the process operation permits. The wireless signal from the DVC6000 is sent to a Smart Wireless Gateway (Model 1420) in a zone 2 area of the plant. The HART information and diagnostics can be viewed via the AMS Device manager with AMS ValveLink SNAP-ON installed on a PC which is connected to the gateway using a crossed Ethernet cable. This WirelessHART™ network is self-organizing. The more wireless devices installed would means the wireless network would be more robust.

Sometimes, wireless repeater would be needed to help boost the signal back to the gateway. The wireless repeater uses an I.S. power module and does not require a separate power supply. This kind of installation would allow the user to gather both offline and online information from the DVC6000 and DVC2000.

Below diagram shows an example of the online performance monitoring of DVC6000.

The benefits of using online performance monitoring will help the user know the health of the control valve. It provides basic information like travel deviation which most often happens when a valve performance deteriorates after some years of plant operation. Once you decided to have a wireless network, it will probably take 2 to 3 days for a small wireless network to be setup. A HART multiplexer network would first have to get the wiring drawings information correct even before doing the installation in the marshalling cabinet while WirelessHART protocol allows you to add wireless HART devices as the process operation permits. It is a total change of the way we carried out additional device installation in a plant.

Produced Water Injection Valve
Application Review

In an oil reservoir, crude oil normally lays on water which is called “formation water”. The drilling and extraction operations that are aimed to maximize the production of oil may be counterbalanced by huge production of contaminated water which is called “Produced Water”. Produced Water is highly contaminated. Apart from oil, the main pollutants are heavy metals and suspended solids. As oil wells mature, the ratio of water to oil increases and produced water becomes a significant byproduct of oil and gas production.

The natural destination of produced water is injection back into the reservoir. The injection of produced water replaces produced oil which in turn keeps the well pressure and crude oil flow in balance. Figure 1 below shows a simple oil & gas processing layout with produced water injection valves.

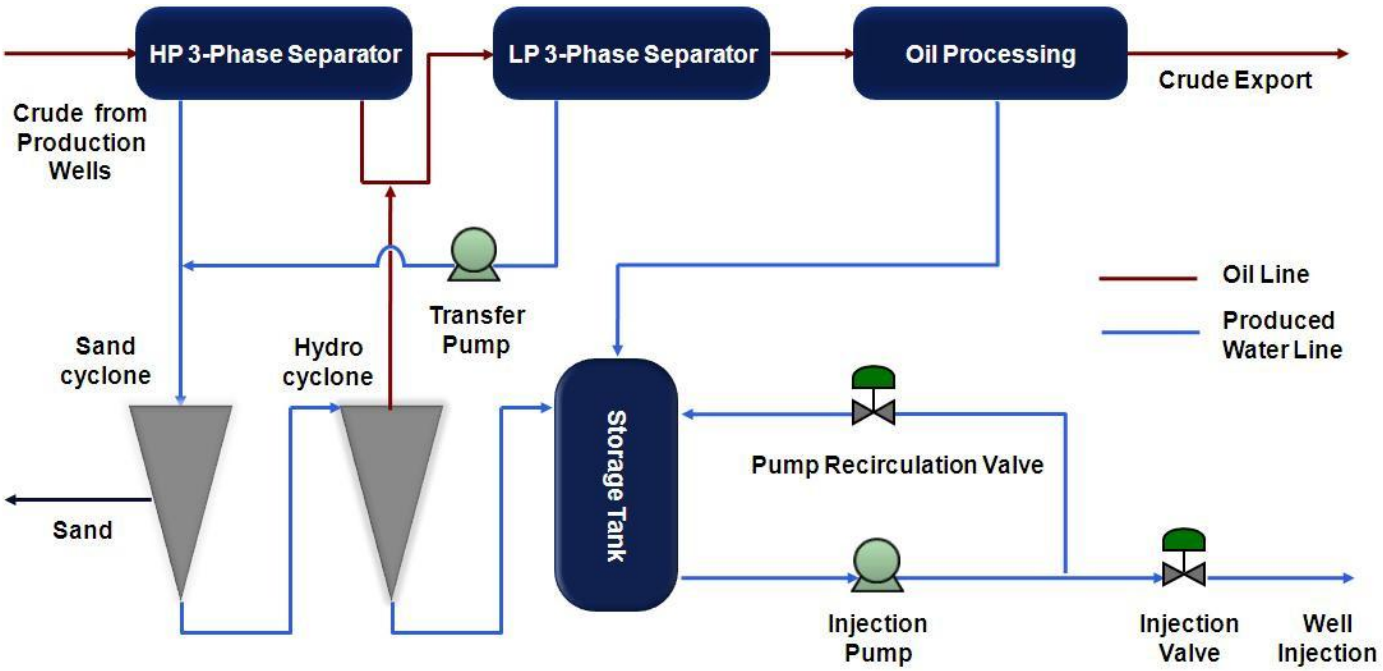


Figure 1: Schematic of oil & gas process with produced water injection

Challenges

There are two valves in the water injection process that have special requirements. The first is the injection valve at the wellhead, and the second is the pump recycle valve for the injection pump. The injection valve will be exposed to severe challenges like those listed below:

- Cavitation during startup. The injection valve will experience cavitation during startup due to the high pressure differential.
- Erosion damage caused by sand and other particulate. Solid particulates can result in erosion and plug conventional drilled hole anti-cavitation trims.
- NACE construction is required for the valves since water will be sour and corrosive leading to stress corrosion cracking.

Recommended Control Valve Solution

Fisher provides engineered solutions for water injection applications that offer protection against cavitation, erosion, plugging and leakage. Fisher has two solutions for this application the NotchFlo trim and the DST trim. These valves reduce high pressure drops by pressure staging to prevent cavitation formation and reduce erosion damage.

NotchFlo DST control valves utilize a high resistance, multi-stage, axial flow path (or passage) where fluid flow is parallel to the axis of the plug and cage. Pressure reduction occurs throughout the length of the plug. Individual stages are not exposed to full pressure differential and trim life is enhanced. NotchFlo DST trim utilizes a series of notched flow restrictions and expansions to control the pressure drop of the fluid. The amount of pressure drop per stage is controlled to prevent cavitation problems and minimize erosion issues on a properly sized valve. The large notched plug allows up to ½" particulate to flow through the trim without plugging. NotchFlo DST control valves are available in both globe and angle valve body designs, in sizes NPS 1 through 8 and ASME class 300 to 2500.

The DST design uses combined axial and radial flow path that features large openings that allows flowing particulate up to 3/4" (19 mm) in diameter. Due to the need for tight shutoff, the multi-stage clearance flow design incorporates a protected seating surface that separates the shutoff and throttling locations. All significant pressure drops are taken downstream of the seating surface. As a result, the seating surfaces are not worn away by throttling control action (the valve must always be opened at or above the min Cv) resulting in significantly extended shutoff capabilities. DST comes in 2, 3, 4 or 6 stages. DST is available in both globe and angle valve body designs, in sizes NPS 1 through 16. DST is available in a range of materials from 440C to tungsten carbide and come with NACE options.

Figure 2: Fisher NotchFlo DST

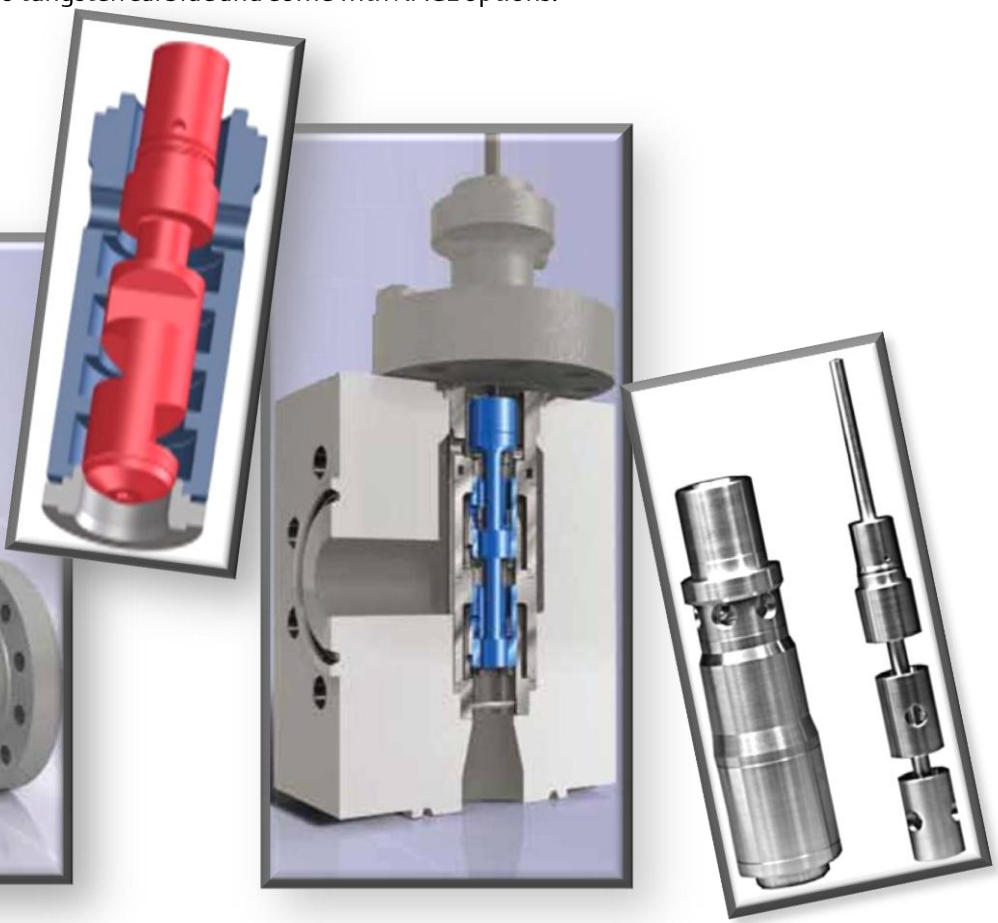
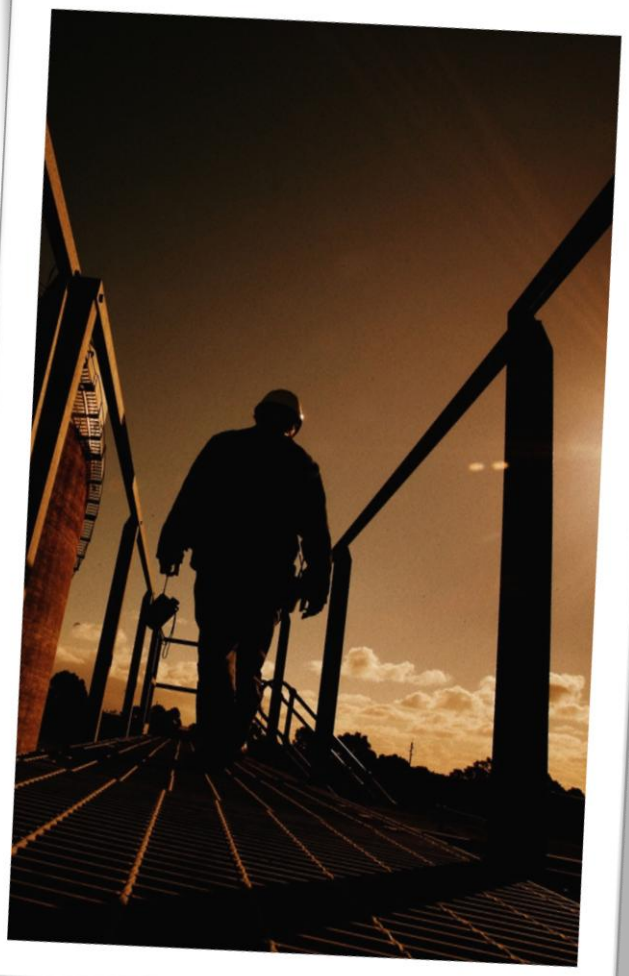


Figure 3: Fisher DST

Fisher® valves resolve valve failure in Lean Benfield Pump Recycle application in Malaysian plant

A gas processing plant in Terengganu, Malaysia had experienced repeated issues with valve stem breakage in their Lean Benfield Pump Recycle line. This gas processing plant (GPP) is operated by the national oil and gas company and it receives the raw natural gas from Peninsular Malaysia offshore platforms. Out of four trains in this single complex, two trains had valve stem failure issues.



The acid gas removal unit (AGRU) in the GPP's removes acid gases (H2S, CO2, COS) from the raw natural gas stream using Benfield solvent. The process unit involves a typical regeneration unit with pump boosting the lean Benfield pressure up to 1,100 psig. This pump uses a recycle valve for protection against load variations. Lean Benfield recycle valve while usually closed, opens with high pressure drop causing cavitation and vibration. The high vibration resulted in stem breakage on numerous occasions. The customer approached Transwater, Fisher's local business partner, for a solution to solve their problem.

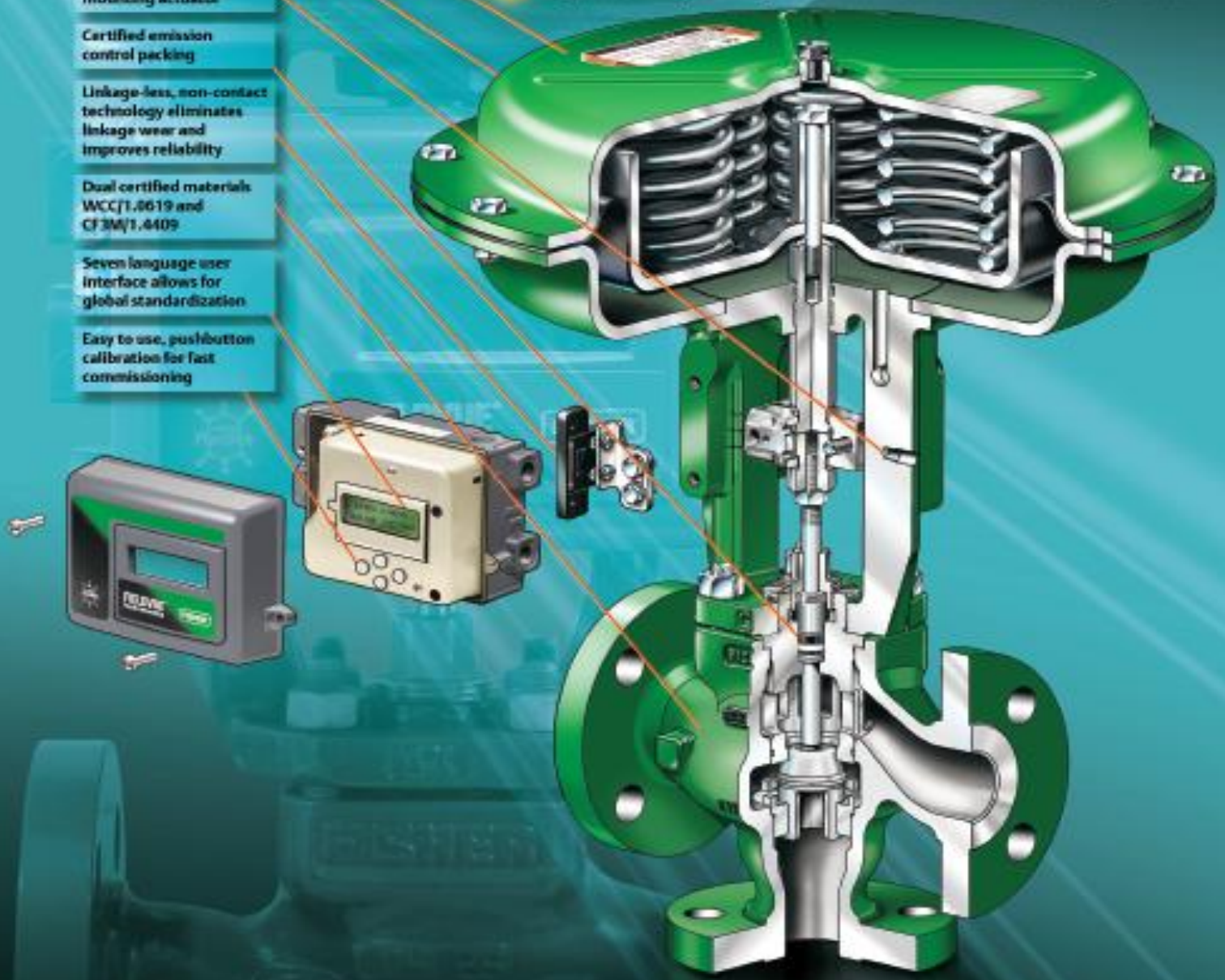
After a detailed study of the root cause, Fisher team provided a solution to address the customer pain. The improvement proposal included an anti-cavitation trim with proper pressure staging to handle the high pressure drop, tight shutoff and material upgrade to prolong the trim service life.

The customer was satisfied with the analysis and they were convinced that the application expertise provided by the Fisher team combined with Transwater's local support capabilities would offer them the best solution. The replacement of control valves at two of the trains were awarded to Transwater. The successful win adds on to the numerous solutions we have implemented at this gas processing plant to position Fisher Valve as the preferred control valve solution provider.

Fisher® GX 3-Way Valve With FIELDVUE® DVC2000 Series Instrument

- Anti-corrosion finish
- Size range NPS 1, 1-1/2, 2, 3, 4 and DN 25, 40, 50, 80, 100
- Compact / NAMUR mounting actuator
- Certified emission control packing
- Linkage-less, non-contact technology eliminates linkage wear and improves reliability
- Dual certified materials WCC/1.0619 and CF3M/1.4409
- Seven language user interface allows for global standardization
- Easy to use, pushbutton calibration for fast commissioning

- Stable flow reduces process variability
- Certified emission control packing as standard
- Integrated linkage-less digital valve controller eliminates tubing and wear



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