FISHER IN CONTROL
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Dynamic Performance Loop Officially Opens In Asia

The Emerson Process Management Dynamic Performance Loop was launched on May 21, 2002. With an investment of US$1 million, it is the latest and most technologically-advanced research test center for control valves and instrumentation in Asia.

Following the media briefing, a launch event was held to showcase the facility to customers around the region. Over 40 key customers attended the launch at the newly-renamed Emerson Process Management Asia Pacific office at 1 Pandan Crescent. Mr Lau Gar Ning, Chief Executive Officer of Tuas Power Ltd, graced the event as Guest-of-Honour.

Mr Lau, a veteran of the power industry in Singapore, remembered the long-standing relationship between Emerson Process Management and power plants in the country. "Since the earlier days of the Public Utilities Board, Emerson Process Management, or Fisher-Rosemount as it was known then, has been a valued name in the field of instrumentation and control processes. Fisher is synonymous with superior product quality and reliable technical support."

"The positive experience of working with Emerson Process Management did not change with the corporatization of PUB in 1995. Even now, in a deregulating market that demands enhanced efficiency, Fisher is still the best fit for the improvement-seeking culture of the power generation companies," he added.

The day also marked the official renaming of Fisher-Rosemount Pte Ltd to Emerson Process Management Asia Pacific Pte Ltd. Mr Mike Train, President, outlined the direction the company is going to take, "Most of you know us as Fisher-Rosemount but going forward we will be Emerson Process Management Asia-Pacific Private Limited. The new name signifies our continued strength with Emerson backing us up and a commitment as a group to work together to solve our customers' business challenges."

The Dynamic Performance Loop, being a test bed for valves and instrumentation, also serves as a platform for Emerson Process Management to demonstrate the superior performance capability of the company's products to current and future users. Mr Steve Pelch, Vice President and General Manager of the Valve Division, cited clear examples where the winning edge was displayed in terms of Fisher's performance in the Asia-Pacific region.

The audience was then treated to a live demonstration of the flowloop's capabilities by Engineering Director Mr Danny Nelson and Senior Marketing Manager Mr Alfred Lee. Extreme plant operating scenarios were simulated and the flowloop instrumentation rose to the challenge with alerts and automatic diagnostic solutions. The media were particularly impressed with the state-of-the-art technologies and have since responded with favourable articles in various industry publications.

An Asian roadshow spanning Australia, Thailand and China is underway. Please call your local Fisher contact for more information.

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Fisher Ships Mammoth Control Valve Assembly

In April 2002, Fisher shipped a most unique valve to the Asia-Pacific - a sizeable 15-foot Digital Control Valve.

Fisher was specifically requested by the customer to execute the order. Custom-engineered for one of Fisher's largest chemical customers, the special valve and diffuser assembly was the first of its kind in the world. The assembly includes Fisher's Whisper III noise abatement trim and a FIELDVUE® Digital Valve Controller.

Nilai Facility Offers World Class Quality And Service

Emerson Process Management Manufacturing (Malaysia) Sdn Bhd, (formerly known as Fisher-Rosemount Manufacturing (M) Sdn Bhd), is the company's largest control valve manufacturing facility in Asia - Pacific. Located in Nilai, it occupies a floor area of 75,000 sq ft.

Its strategic location (within 15 minutes from the Kuala Lumpur International Airport and 45 minutes from Port Kelang) ensures speedy delivery and fast customer service to customers in the Asia-Pacific region.

With LEAN Manufacturing, Nilai has managed to reduce delivery lead time, inventory and improve the first pass quality acceptance of finished products. In addition, to satisfy Asia-Pacific customers' needs, Nilai's product range has grown from general service control valves and instruments, to high-pressure specials for severe service applications.

This facility uses the latest technology available to produce world-class products that are of equal quality to the company's North American counterparts. Specialized manufacturing equipment, from the latest computerized numeric machines to the powder painting system, ensures that products are of international standards.

Besides ISO 9002 accreditation, the Nilai facility also obtained the Pressure Equipment Directive (PED) certification earlier this year. This allows the products to bear the CE mark for shipment into the European Communities.

Digital Valve Boosts Bottomlines In India

Results spoke loudly once again for the Fisher Digital Valve at a Carbon Black plant in India. Boosting bottomlines by reducing process variability is a Fisher promise delivered by the Fisher Digital Valve.

The customer had been using Advance Process Control (APC) earlier and was able to achieve a standard deviation range of 0.3 to 0.5. With the installation of the Fisher Digital Valve (a one-inch Fisher easy-e® actuator with a FIELDVUE® DVC 5010), he was able to reduce the standard deviation to the range of 0.1 to 0.25. The stellar performance of the Fisher Digital Valve convinced the customer to install them in control loops in the plant.

The Digital Valve was installed in the critical fuel oil feed loop which controls fuel to the reactor. Variance in the loop performance had a direct impact on the cost of goods sold.

The DCS trends showed improvements in the performance of the newly-installed Fisher Digital Valve. In fact, the flow variation was reduced by 10 times, resulting in consistent product quality and lower cost of goods sold.

The customer was also pleased with Fisher's technical support staff for recommending the correct control valves for the application.

More Parts For FAST Delivery

The business environment and market demands of today are a far cry from yesteryears. Customers expect speedier turnaround and shorter delivery lead times. The FAST MRO* team rose to the challenge.

As of 2003, the FAST MRO team in Singapore will hold an average value of quarter million dollars in parts inventory to better meet customer demands. The team will meet customers' requests within 48 hours and provide integrated customer service for the Asia-Pacific region.

**'MRO' stands for Maintenance, Repair and Operations*

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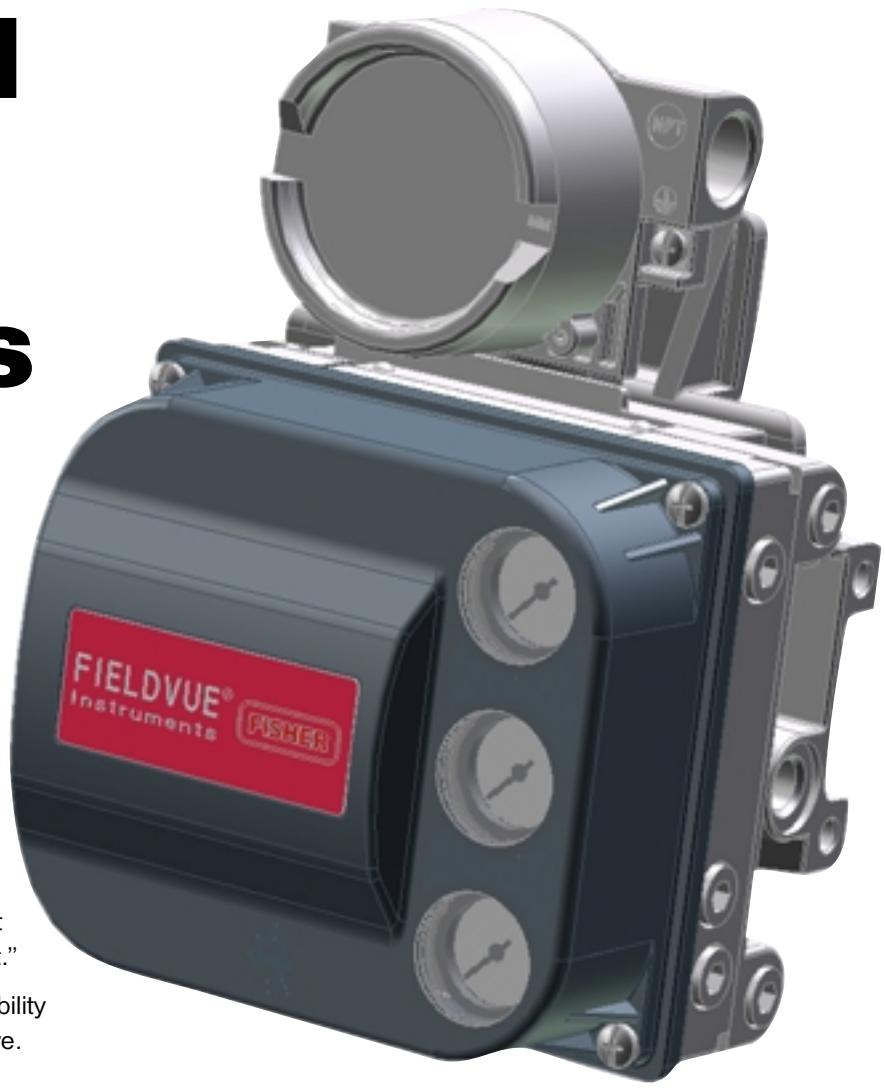
Valve Innovation

Stainless Steel and Remote Mount DVC6000 Products Now Available



Stainless Steel DVC6000

Corrosive plant environments no longer present a challenge to the FIELDVUE® Digital Valve Controller thanks to a new, stainless steel option.

Now the DVC6000 Series can be furnished with a stainless steel module base, housing and an all-stainless mounting kit, along with enhanced sealing of the unit's potentiometer shaft. The stainless steel version eliminates all die-cast aluminum parts, which greatly increases the DVC6000's resistance to the tough, corrosive environments found on offshore platforms, within chemical plants and inside refinery processing units.

Offshore oil, chemical, and mining customers are particularly interested in the stainless steel DVC6000. Off the coasts of Australia, for example, interest is high on the northwest shelf and Bass Straits over the new stainless steel version's ability to withstand salt-water corrosion. Similarly, North Sea platforms will use the stainless steel DVC6000 for seawater environments.

Remote Mount DVC

In addition to the stainless steel offering, the DVC6000 can now be remotely mounted from the actuator. The feedback assembly can be separated from the DVC in a compact design package using all currently available standard mounting hardware.

This assembly is capable of temperature ranges from -60 to 125 degrees C. The product addresses applications where vibration is excessive and the user desires to separate the electronics assembly from the valve. Pharmaceutical and Biotech industries in "space constrained" process areas are examples of another excellent application.

The DVC6000 Series, with excellent auto tuning and robust performance into small and large volume actuators, is an excellent choice for remote mount applications.

Asia Engineering

Fisher's newest Engineering Center, located in Singapore, served as the product's design and project management resource for both programs. Today, the Singapore site is the manufacturing center for the new stainless steel and remote mount option. Danny Nelson, who leads the Asia engineering team in Singapore explains, "The Asia team works in close collaboration with the design headquarters in the US. In fact, the Singapore design center helps put Fisher in the enviable position of being able to deliver products and support quickly and efficiently to the global market."

For more information on product availability please contact your Fisher Representative.

Fisher DVC6000 Gains TÜV Certification For Use On Emergency-Shutdown Valves (ESD) In Safety Instrumented Systems (SIS)

Fisher's FIELDVUE® DVC6000 Series Digital Valve Controller has received certification from TÜV, an internationally-recognized, German-based inspection authority. With this certification, industrial manufacturers worldwide may apply DVC6000 instruments to Emergency-Shutdown valves (ESD) in Safety Instrumented Systems (SIS). The new SIS-enhanced valve controller uses the power of on-line diagnostics and partial stroking to virtually eliminate the valve as a source of failure in a critical application.

Emergency shutdown valves are designed to take the process to a safe state if certain, pre-specified operating limits are exceeded. Adding a Digital Valve Controller to these critical valves offers numerous benefits. With the DVC6000 instrument, users may conduct partial-stroke tests of the valve while the process is on-line. Simplified and secure testing procedures facilitate more frequent testing and continuous monitoring.

Emerson asked a third-party authority in automation safety and product reliability to conduct tests and analyze the performance of the Fisher FIELDVUE® DVC6000 Series Digital Valve Controller. These tests included Failure Mode Effect & Diagnostic Analysis (FMEDA). Results prove that the product complies with international standards including IEC 61508 for functional safety and is suitable for use up to and including SIL3 applications.

Dr. William M. Goble, a Professional Engineer and a certified Functional Safety Expert, says responsible manufacturers contract for third-party product evaluation and approval. He said, "These tests provide a conservative product failure rate and diagnostic data for the purpose of safety integrity verification."

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Dead Band Kills!

Dead Band Kills Valve Performance

Dead band is a major killer of process variability, and control valves are the primary source of dead band in an instrumentation loop.

Process variability is a statistical measure of the variation, or spread, of the process variable data about the set point. The less the spread, the better the process variability, and the greater your profits.

To better understand the role dead band plays in determining process variability, we can start by dividing the configuration of the loop into two parts; i.e., the Controller, and everything else in the loop which we shall call the Process.

In an ideal situation, we would expect the process to be a completely linear, one-to-one relationship between the controller output and the measured process variable at the output of the transmitter.

The ideal process characteristic implies that whenever a load disturbance occurs and the controller output calls for a corrective action, there will be an immediate corresponding corrective change in the measured process variable. In this ideal situation, the level of process variability we obtain will be determined primarily by the aggressiveness with which we tune the controller.

Now, lets review what happens when dead band is present in the loop. Dead band in the control valve is a major reason why your process variability may be excessive.

Dead Band And Its Effects

Dead band is the name given to a general phenomenon where a range or 'band' of process input values fails to produce a change in output. A change in input occurs, but the process appears to be 'dead' i.e., nothing happens as a result of the input change.

Due to dead band, an increase in the input to the process initially produces no corresponding change in the process output. Only when the controller output has changed enough to progress through the dead band does a corresponding change in the process variable occur.

Any time the controller output reverses direction, the controller signal must again pass through the dead band before any change in the process variable will occur. Regardless of how small the desired change in the process variable, the process must always pass through the dead band before that incremental change can occur.

When a load disturbance occurs, the process variable will deviate from the set point. This deviation will initiate a corrective action through the controller and back through the process.

The presence of dead band in the process essentially ensures that the process variable deviation from the set point will have to continue to get larger until it is big enough to get through the dead band in the process. Only then can a corrective action occur.This, of course, wreaks havoc with the process variability. Obviously, the greater the dead band of the process, the greater the process variability.

Causes of Dead Band

Dead band is a general phenomenon which has many causes, but friction and backlash in the control valve are the two most common forms. Regardless of the cause of the dead band, the discontinuity between the input and output of the valve is always the same.

Since most normal control actions consist of small changes (eg. 1% or smaller), a control valve with excessive dead band may not even respond to many of these small changes. A well-engineered valve should be able to respond to signals of 1% or less in order to provide effective reduction in process variability; however, it is not uncommon for some valves to exhibit dead band of as great as 5% or more.

Friction

Friction is a major cause of dead band in a control valve; eg. As we make a change in the valve input there is no corresponding change in output due to the friction. Eventually the friction force is overcome and the valve stern begins to move in the linear manner that we initially expected.

When the input signal stops increasing, the valve stern stops moving. Now as we decrease the input there again is no corresponding change in output due to friction holding the stem in place. Eventually, however, the friction force is overcome and the valve begins to move linearly in the reverse direction.

Rotary valves are often very susceptible to friction due to the high seat loads which are required to obtain shut-off with some seal designs. Manufacturers often lubricate rotary valve seals during manufacture, but after only a few hundred cycles this lubrication wears off, and the valve friction can increase by as much as 400% or more.

Packing friction is a major source of friction in sliding stem valves.

Shaft Wind-up

Shaft wind-up can often magnify the effects of dead band due to friction in a rotary valve when the actuator force is applied at the opposite end of the shaft from where the seal friction occurs. As friction holds the disk or ball in place, torsional deflection of the shaft absorbs energy which requires additional change in the process variable before load can be applied to overcome the friction. This wind-up results in additional process deviation or variability over and above that due strictly to friction.

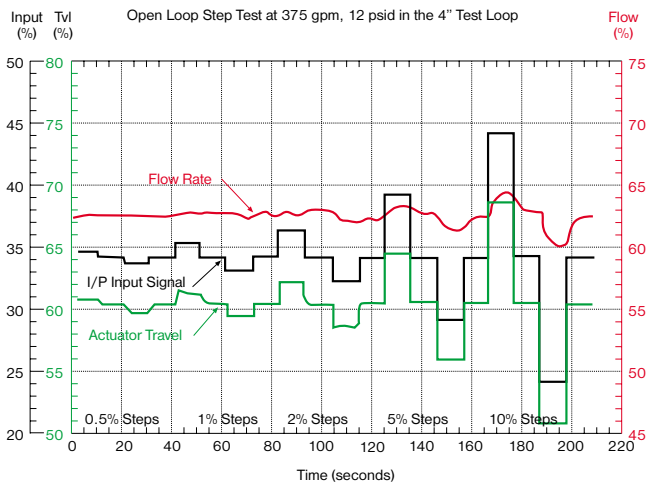
Backlash

Backlash is the general name given to slack, or looseness of a mechanical connection. This slack results in a discontinuity of motion when the device changes direction. The result is the same type of dead band effect show in the previous diagram.

Backlash commonly occurs in gear drives of various configurations. Rack and pinion actuators are particularly prone to dead band due to backlash. Certain valve shaft connections also exhibit dead band effects.

While friction is a difficult phenomenon to eliminate entirely, a well-engineered control valve should be able to virtually eliminate dead band due to backlash.

The figure below shows just how devastating the combined effects of dead band due to friction and backlash can be.



Notice that the valve travel responds well in input signals as low as 0.5%, but it is obvious from the flow signal that backlash and friction in this rack and pinion operated valve prevent the valve from being any better than 5-10%. Process variability with this valve assembly would be very poor.

The Solution

Remember, the reason the valve is called the final control element is because the control valve is where process control gets implemented. It is illogical to install an elaborate process control strategy and hardware instrumentation system capable of achieving 0.5% or better process control and then implement that control strategy with a 5.0% or worse control valve. Control valves are highly engineered products and should be treated as such. The solution to process variability problems is to buy the best control valve you can purchase.

An Invitation

Fisher understands control valves and can help you select the best valve to reduce your process variability. We recognize that the proof is in the real-life results, so we suggest that you try us out and prove it to yourself. Our technical experts can provide you with concrete proof that a few extra dollars spent on a well-engineered control valve can dramatically increase your return on investment.