

# Advantages of Using Linkage-less, Non-contact Feedback Technology in Digital Positioners

## The Problem

In order to accurately position control valves, eliminate assembly friction, and dismiss other non-linearity issues, digital positioners require detailed stem position information. Mechanical linkage and contact potentiometers used for stem position feedback are subject to wear, corrosion, and vibration damage. Damage to the components used to deliver stem position feedback can lead to poor loop performance, unplanned maintenance costs, and lost production.

## The Solution

The use of linkage-less, non-contact feedback technology eliminates issues associated with moving parts, including wear, loosening, corrosion, and vibration damage. This technology allows facilities to reap the benefits of smart positioning in their toughest applications, without putting production at risk.

## The Principle

Linkage-less, non-contact stem position feedback is possible when using a Hall effect sensor to measure magnetic flux density across an array of permanent magnets.

Hall effect sensors are transducers that vary output voltage in response to a magnetic field. Each voltage measurement represents a unique stem position.

Made from “hard” ferromagnetic materials, permanent magnets retain their own constant magnetic field after exposure to a powerful external magnetic field. This exposure aligns their internal microcrystalline structure. A series of calibration processes are used to stabilize the magnet against irreversible losses due to temperature, shock, and aging. Once stabilized, the magnetic field will remain constant until heated to its Curie temperature—greater than 1000°F (537°C).

## The Benefits

Use of linkage-less, non-contact stem position feedback benefits plants by:

- Eliminating problems due to worn, corroded, and damaged linkages and potentiometers from vibration.
- Providing access to performance diagnostics, improving valve control, and increasing the ease and speed of commissioning projects, even in the toughest applications.
- Reducing unplanned maintenance and lost production due to premature positioner failures.



# Linkage-less, Non-contact Feedback Technology

## The Reliability

Linkage-less, non-contact feedback technology has been available in Fisher® FIELDVUE™ digital valve controllers since 2004. Currently, over 600,000 instruments have been sold to global customers serving key industries, including oil and gas, refining, power, chemical, pulp and paper, life sciences, food and beverage, and metals and mining.


To ensure reliability, extensive testing is conducted, including extended cycle, vibration, and performance. Extended cycle testing completed over a thirty month period has resulted in four million cycles with no change in valve performance.



*FIELDVUE DVC6200 digital valve controller*



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