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Digital Valve Controller Provides Lasting Savings

Linkage-less non-contact unit successfully copes with vibration

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THE SHANGHAI Ethylene Cracker Complex (SECCO) in China is one of the world's largest integrated chemical facilities. The complex includes a naphtha-fed ethylene cracker and ten downstream derivative plants with thousands of control valves of varying brands, types and sizes.

Most of these control valves operate as intended — providing stable control, responding to signal changes and reaching set point smoothly without stiction or overshoot. Occasionally, however, a control valve causes problems. In one case, pipeline vibration regularly destroyed a valve's instrumentation. Because changing the process or piping wasn't feasible, we simply were replacing the positioner — every three months. The expense of replacement instruments, plus lost production and labor costs, routinely exceeded \$40,000/year for this single valve.

A team of SECCO instrument engineers, together with engineers from Star Controls, the local business partner of Emerson Process Management, studied the problem. After careful consideration, the team decided to install a Fieldvue DVC6200f digital valve controller. The unit features linkage-less non-contact position feedback and Foundation Fieldbus communication

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capabilities. Instead of relying on a physical connection between the position-sensing element and valve stem, the new device uses a magnetic array to detect valve stem position. Thus, it can tolerate high levels of vibration. Emerson supplied the mounting kit for the non-Fisher valve and actuator assembly involved.

At its commissioning, SECCO was the world's largest Foundation Fieldbus installation. Communicating via digital fieldbus provides a number of operating advantages, including fast commissioning of a valve either locally or remotely. Significant hardware savings also are possible — accessories (e.g., limit switches and position transmitters) can be eliminated because the information is available over the fieldbus network.

Because the fieldbus system provides continuous digital communication to and from field devices, the controller delivers prompt notification of current or potential valve issues. Using performance diagnostics, information that can be provided on-line during process operation — via ValveLink software — includes low air supply or pressure droop, external air leakage from the actuator or tubing, a calibration shift, excessive valve assembly friction or a broken actuator spring.

We installed the Fieldvue DVC6200f unit on the troublesome valve in March 2010. The instrument continues to perform with good accuracy and reliability. By eliminating the need for replacement every three months, the device has paid for itself many times over since installation. Based on the performance of the DVC6200 in this application, we have installed three more units. ●

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Digital Valve Controller



Figure 1. Unit features reliable and accurate linkage-less, non-contact valve-stem feedback technology.