

Exlar® Electric Actuators Provide Precise Pressure Control

APPLICATION

Liquid petroleum products and liquid natural gasolines are transported via pipelines from refineries and terminals to end users. To overcome the pressure drop that occurs when transporting liquids over a long distance in a pipe, numerous pump stations are located along each pipeline to boost the line pressure to an acceptable level. Each pump station requires exceptional control of the process, as many are near populated areas. A key contributor to providing precise and stable pressure control at each station is the valve control system, particularly the actuation of pressure control valves used to control the back pressure of the liquid. Proper pressure control at the pump station is critical, as fluctuations at one pump station can be amplified at downstream stations.

CUSTOMER CHALLENGE

Hydraulic actuators have traditionally been used in these pressure control applications due to their stiffness and response rates. The customer was experiencing significant maintenance and performance issues with their existing hydraulic system which included a large 25 gallon hydraulic fluid tank, filtering system and supply lines in addition to the cylinder itself. The hydraulic systems were deemed unreliable due to the frequency of required maintenance. Potential hydraulic fluid leaks were also a major concern, as the EPA requires a hazard recording each time there is a leak.

While other hydraulic-based solutions were considered, the customer preferred an all-electric solution to simplify control and reduce maintenance. The challenge was finding an actuator that would match the capabilities of hydraulics, but with higher reliability, precision, and less maintenance.

SOLUTION

The Exlar® GSX60 electric actuator was chosen to replace the existing hydraulic solution. Exlar actuators use a roller screw to convert the rotary motion of a servo motor



directly to a linear force. This unique design provides high force and fast response needed for the application, as well as long life to minimize maintenance. Controls for the actuator were provided by Rockwell Automation, seamlessly integrating the Exlar valve actuator into the overall pump station control. The control scheme also includes continuous diagnostic capabilities; providing information on the health of the valve as well as the actuator

RESULTS

The result is an all-electric actuator solution that provides more control flexibility, higher speed, faster response, lower energy consumption, and longer life than any hydraulic actuator alternative available today in a compact, easy to install package. Control was optimized and significant reductions in operating costs were achieved with the low maintenance package. Risk was alleviated by the elimination of all hydraulic fluid.