Application Information Release

QTRPAQ High Speed / High Cycle Food Processing

In mid 2000, a QTRCO Distributor salesman was calling on a food preparation company when he was asked to look at an application that was a real problem. The problem was a need to increase the operating speed for a number of 3" full port ball valves. The company was using double acting vane actuators complete with large 4-way solenoids and quick dump exhaust valves to drive the ball valves however, because of a new incentive program offered to their employees, an operating speed of half was now desired. They had tried several conventional rack & pinion actuators but in each case the actuators internal air porting had slowed down the operation of the valve rather than speed it up. The company did not know where to turn next but the salesman did. QTRCO.

The salesman had known about QTRCO QTRPAQ actuators being able to operate similar ball valves in roughly one-quarter of a second so he asked the customer if he was having any other problems. Yes, several. Because of the high speed operation and high number of cycles occurring every shift, each actuator required daily adjustment of the position stop bolts to insure the valve's full open and close positions were made. Also nose caused by the compressed air venting from every quick exhaust valves was a problem as was the down time need to rebuild the actuators frequently. Lastly, there was the problem with the paint flaking off the actuators in an area subject to FDA inspection.

Because of the QTRPAQ's direct cylinder porting and the ability to speedup the valve's operation well beyond what the customer wanted, a standard spring return actuator was selected and installed. The choice of a spring return actuator was un-conventional but it served to address several other problems for the customer. One problem, not related to the salesman, was the need for a constant speed of operation on the valve's close cycle thus eliminating product variations. The double acting actuator's speed of operation changed with the changes in supply air pressure to the actuator. Using a spring to close the valve insured a constant speed as well as reducing the exhaust nose by half. The ability to cycle beyond the customer's needs also allowed the addition of an exhaust muffler on the open cycle thus eliminating the noise problem altogether. At the end of the customer's test program, about five weeks, the actuator had completed 600,000 cycles without a problem or a single position stop adjustment and more than twice the number of cycles obtained by the vane actuator without repair. And yes, the paint problem was solved too.

UPDATE: Due to increased production needs, the Q10SR80 spring return actuator now cycles every 2 to 3 seconds 3 shifts a day and 5 days a week. That's 14,976,000 operations a year without let up, maintenance or repair.

QTRCO, Inc. 13120 Theis Lane Tomball, TX 77375
Ph: 281-516-0277 Fax: 281-516-0288
WWW.QTRCO.COM
Email: qtrco@qtrco.com