DeZURIK

APPLICATION SOLUTION
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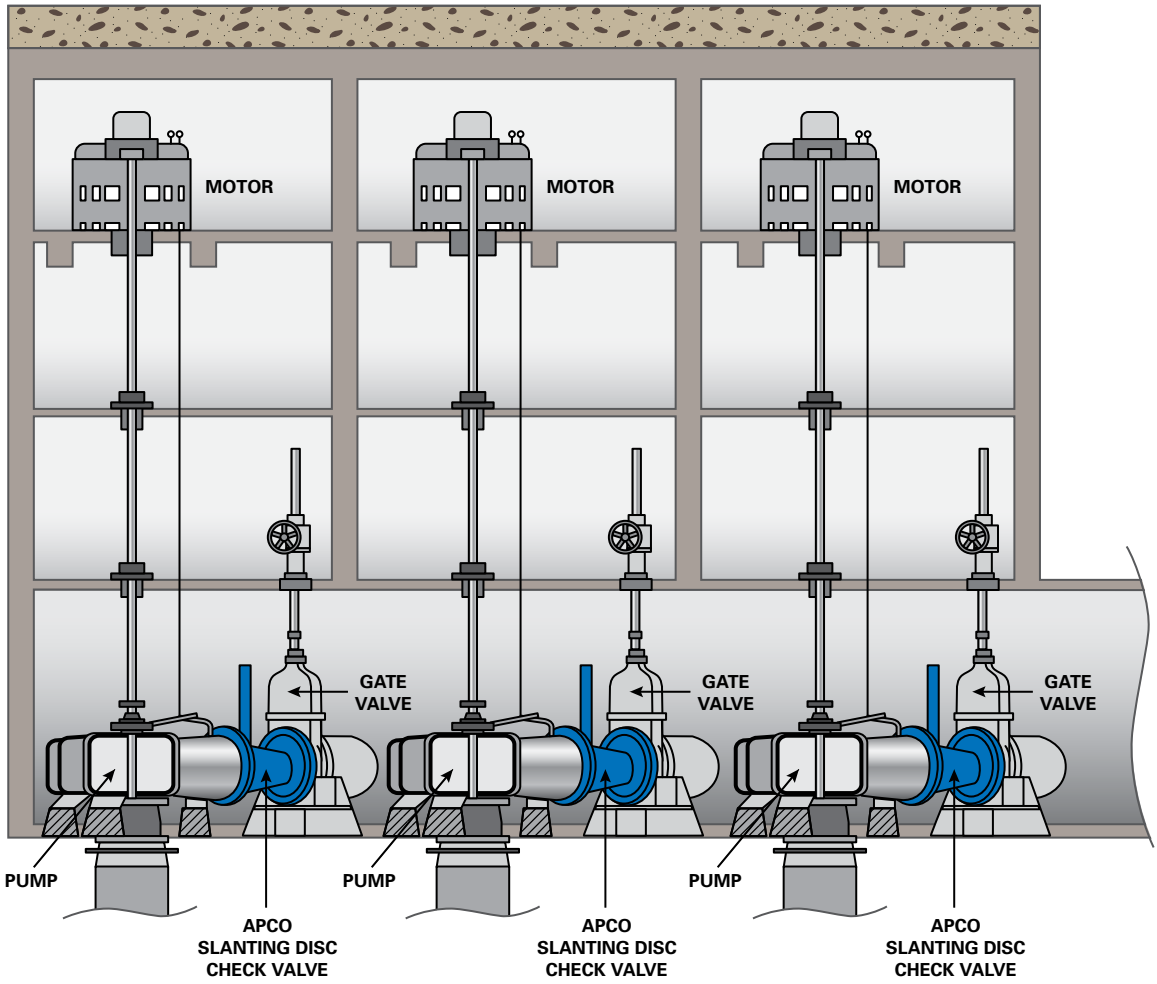
216

54" APCO CSD SLANTING DISC CHECK VALVES SOLVE SPACE CONSTRAINT ISSUE IN DRY DOCK APPLICATION



APPLICATION

The US Navy wanted to replace three slanting (tilting) disc check valves that were installed on a dry dock in a shipyard in the Northwest United States. After a vessel is floated into the dry dock, three vertical centrifugal pumps, pumping 130,000 GPM each, drain the 1,000 foot long dry dock of seawater to allow maintenance or construction to be performed on the ship. The three check valves prevent back flow on the pump discharge. The valves were originally installed in the World War II era, and now, after almost 70 years of service, the body walls of the valves had eroded so extensively that repairing the valves was no longer an option.

What made this application particularly challenging was that these valves were installed in a cement vault that had no extra space. The original valves were constructed with a non-standard, 72 inch face-to-face dimension and manufactured by a company that is no longer in business. Standard ASME face-to-face on a 54 inch check valve is 78 inches, a full 6 inches longer than the vault would allow.

SOLUTIONS

Because of the unique two-piece body design and slanted disc orientation of the APCO Slanting Disc Check valve, the body patterns could be modified to pour castings to match the laying length of the original valve, while maintaining all other elements of structural integrity. With the top-mounted oil dashpot, these Slanting Disc Check Valves are over 17 feet tall and weigh over 16,000 pounds. DeZURIK/APCO/HILTON's experience and expertise in manufacturing large valves allowed the company to commit to the critical delivery requirements for these valves.

In addition to the custom face-to-face dimension, the specification also called for a field-replaceable seat held in place with lock screws; a ductile iron disc with double-clevis connection to a ductile iron disc arm; and a hydraulic oil-filled buffer dash pot to permit positive non-slam control closure of the disc. The hydraulic buffer needed to be externally adjustable to control the disc during the last 10 percent of closure to prevent slam and water hammer. The APCO CSD Slanting Disc Check Valve included all these features as standard.

APCO CSO Slanting Disc Check Valve with custom face-to-face dimension and top-mounted oil dashpot

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