

Silent Treatment – Valve Technology upgrade at Mt. Horeb, WI wastewater treatment plant operates quietly and efficiently.

By: Megan Larson

Michael Goltz, Superintendent of the Mt. Horeb, WI Wastewater Treatment Plant, had a problem. The cushion swing check valves installed in one of his eight lift stations kept slamming and clogging. This lift station precedes 10,000 feet of pipe leading to the treatment plant, and was one of the worst places to have a clog. The station is on the edge of a residential neighborhood whose inhabitants would be none too pleased if raw sewage began to creep around their homes. The valves in question were allowing sewage to build up on top of the disc, restricting the effectiveness of the valve and causing it to slam. Sewage would build up on the disc, pushing the disc further down into the flow creating incredible head loss, clogging, and constant slamming. The cushion swing check valve that was being used had a non-metallic insert for the seal. Every time a piece of plastic, wood, or any other sewage solid would nick or chip the cork, the seal would begin to weep. The Mt. Horeb Wastewater treatment plant processes up to 600,000 gallons a day, and they couldn't afford to have valves not working.

That manufacturer of the cushion swing check valves recommended solution was to have the valve removed from the line, shipped back to them for repair, then shipped back to the customer for reinsertion. This could lead to a downtime of over a month, leaving the lift station down to 1 pump and no back-up coverage for a pump failure. Mr. Goltz and his crew resorted to repairing the valves on their own to decrease downtime, which was not a small endeavor. In order to repair the valves, they would have to be completely removed from the line, then the shaft would have to be removed and repaired, then everything would have to be reassembled. The total process took roughly 4 hours.

Mr. Goltz decided it was time for a change, researched available valves, and learned about the Val-Matic Swing-Flex® Check Valve. The Swing-Flex was designed specifically to combat the frustrations he was facing. The contour of the body provided for a 100% flow area to minimize head loss, and due to the innovative disc design and domed access port, the flow of the sewage is able to self-flush any potential clogs and prevent them from forming. With the disc being the only moving part, there were no internal components



The Val-Matic Swing-Flex Check Valve was already used once to replace the "other" valve. Operators liked it so much they ordered another.



This is NOT what you want to see in your valve. Solids were getting trapped in the valve and clogging up the pipeline.



Solids bind together to form large clogs. This isn't a problem for the Swing-Flex.



The old valve is removed.

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to get in the way and the valve was very easy to install. The Swing-Flex was designed with an angled seat, resulting in a 35 degree disc stroke, less than half of a traditional weight and lever check valve. This short disc stroke combined with the Memory-Flex® action of the disc serves to reduce the closing time of the valve and minimizes the flow reversal to quell any resultant water hammer. "After the installation, when the valve closes from the force main, there is no measurable sound. I couldn't even hear it shut and you can't get any better than that," Mr. Goltz commented.

After the success of the Swing-Flex on one of the two pump lines in the lift station, Mr. Goltz decided to replace the remaining traditional cushion swing check valve with another Swing-Flex. The switch was easy and expedient. In just about an hour, the old valve had been removed and the Swing-Flex was being tested for flange tightness.

"The Swing-Flex was very simple to install, there were no mechanicals to worry about, and the valves are simple," said John Klein, Senior Lead Operator of the treatment plant.

Wastewater treatment plant operators are all too familiar with the labor and cost associated with using equipment of inconsistent quality, or inefficient design. Whether the plant is servicing a teeming metropolis, or a charming little hamlet like Mt. Horeb, equipment problems can be devastating. By carefully evaluating the unique requirements of each application, operators can be assured that the right equipment can alleviate some of the major inconveniences associated with antiquated technology.

As seen in the October issue of "Water and Wastes Digest."



The new Val-Matic Swing-Flex is installed.



Now a Val-Matic Swing-Flex is working on both lines.

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