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Smooth Conveying

New elbows prevent wear-through in a wastewater treatment plant's lime-conveying lines

As the primary sewage treatment facility in Alexandria, Va., the Alexandria Sanitation Authority treats an average of 40 to 45 million gal per day (mgd). At peak, the volume can exceed 80 mgd, as the plant operates 24 hours a day, seven days a week. In addition to Alexandria, the plant also serves Fairfax County.

The operation uses about 500,000 lb of pelletized lime per month for pH control. This powdery mix is pneumatically conveyed from trucks to 70-ft silos through twin 4-in. lines.

After two years of service, plant operators in Alexandria, Va., could find no hint of wear on the Smart Elbows.

The Glitch

Initially fitted with 4-in. sweep elbows, the lime-conveying system started experiencing leaks in the sweeps after about six months of operation. The sweep elbows were swapped for sweeps fitted with wear-backs. Those lasted a bit longer. "Then we were probably losing an elbow every nine months," according to Bob Devereaux, lead mechanic. The dust was a problem—and so was the downtime.

Plant Process Manager Tom Tyler sent Devereaux a postcard featuring a different kind of elbow offering a free trial. He checked out the website and then contacted HammerTek for the name of a local representative.

The Smart Solution

In April 1998, Alexandria Sanitation Authority began replacing sweeps in the lime lines with 4-in. HammerLoy Smart Elbows. By June 2000, there were five Smart Elbows in service. According to Devereaux, two years later they pulled a couple Smart Elbows out of the line and inspected them for wear—there was not any that they could see.

Since 1998, the HammerTek Smart Elbows have steadily replaced sweeps and consistently resisted any hint of wear. According to Devereaux, the switch to the Smart Elbows has more than paid for itself. In fact, 14 more Smart Elbows were specified for a plant expansion.

Intelligent Engineering

Smart Elbows rely on deflection, not impact, to change flow direction, thereby eliminating the impact-related problems associated with virtually every other conveying elbow design. At system startup, a gently rotating ball of suspended material forms in the vortice chamber of the Smart Elbow. As the main flow of material passes this ball, it is "deflected" through the desired change of direction without impact, friction or wear to the elbow's interior surfaces.

HammerTek Smart Elbows can save companies time and expenses and reduce regulatory paperwork by not failing in the first place. They are truly an intelligent "ounce-of-prevention" for conveying systems where any incidence of sweep elbow failure has environmentally sensitive consequences. WWD

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