

Monitoring Pump Discharge Pressure in Slurry Lines



In applications where positive displacement pumps are used for pumping abrasive slurries, it is imperative to measure pump discharge pressure in case the system encounters a blockage. The pump is normally capable of generating very high pressures in excess of the operating limits of the piping system. As a safety measure, normally a rupture disk system is employed as a preventative measure. However, if the disk ruptures, the slurry sprays out into the surrounding area. In the case of sewage sludge or harsh chemicals, this could mean a very expensive cleanup.

A number of years ago in California, there was an instance at a sewage treatment plant where the discharge orifice on a sludge line became blocked and the rupture disk ruptured. Plant personnel did not discover it for about five hours. The sludge (20% solids) discharged into the surrounding area until someone noticed the three feet deep accumulation. The cleanup was pretty nasty!

Most installations currently use a Red Hat annular ring with either a pressure gauge or transmitter installed to monitor the pressure. The piping must be configured using a flange mounting in order to accommodate the ring.

Abrasive slurries wear out the ring in 6 to 24 months under normal use. It takes an experienced technician about 12 hours to replace the ring and clean up the area. Viatran's Model 555 is an ideal substitute for the annular ring. It takes less than an hour to install it using a special pipe saddle with integral shutoff, and replacement is less than 15 minutes with no clean-up required. The Model 555 has a thick Inconel X750 diaphragm that resists abrasion and should provide many years of service