

Black Powder / Buffer Gas



Magnetic Separator – 5YS1F6A

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POWER ENGINEERING News Letter

Poor Buffer Gas Fluid Main Cause of Gas Compressor Seal Failure

Most failures of refurbished compressor gas seals result from lack of clean and dry buffer gas supplied to the compressor, according to a recent analysis conducted by a leading supplier of engineered sealing systems and associated products. These seals are used on most pipeline compressors that supply gas to gas turbines at power plants and in compression systems needed to boost gas pressure in power plant gas turbines.

According to Joe Delrahim, marketing manager for Morton Grove, Ill.-based John Crane Inc., this high percentage is significant because most companies in the power industry invest lots of money and effort into monitoring or recording gas seal leakage flow, yet devote little emphasis to reliability and problem prevention. More often than not, says Delrahim, seals fail due to lack of a continuous supply of clean, dry buffer gas that is critical to successful operation and seal longevity.

Although the process gas may have impurities or contain liquid, it is essential to use clean and dry buffer gas for compressors equipped with dry running gas seals,” says Delrahim. “These seals are designed with no contacting faces, and the normal operating gap between the faces is approximately 2 microns. Therefore, any accumulation of particulate larger than 2 microns will cause the faces to contact each other, which will result in seal failure. Unfortunately, this extremely critical requirement is often ignored throughout the planning, commissioning and operating process. This shortcoming, particularly during the commissioning period, results in multiple seal failures, which cause operational loss and delay in start-up.”

Common control system designs for gas seals consist of filtration, regulation and monitoring. Although the filtration facet is rather simple, these control systems typically offer elaborate monitoring and regulation features. In essence, says Delrahim, standard filtration is used on all applications of gas composition and/or presence of liquid and condensation at any level of mixtures. According to documented project histories by John Crane over the last decade, this shortcoming has proven to be the root cause of most seal failures, particularly during commissioning and/or the operation period.



Shown is a seal that failed due to lack of continuous clean, dry buffer gas. John Crane reports that such a deficiency causes a majority of the seal failures the company sees during compressor refurbishments. Photo courtesy of John Crane Inc.

Delrahim says that getting to the root of the problem begins with the proper analysis of mechanical failure. This involves a review of gas composition, commissioning procedures and control system design, along with the interface between the seal, compressor and the control system. Further, it is essential to gain an understanding of the control system piping/instruments diagram and its related pre-established software that allows logic input for safe unit operation.

From One Eye Industries Inc,

One Eye Industries has developed a line of black powder separators that have the capability of removing the black powder erosion/corrosion particles down to submicron particle size that are causing the seal failures. Our separators work with and compliment existing filtration systems. They also are used to protect meter gauges and sensors. Please contact our office at 403-242-4221, 877-888-8727 or info@oneeyeindustries.com and we will direct you to a distributor in your area. Please visit our website for further information.