

Company: Washington Gas & Light Company

Project: Gardiner Road Gas Conditioning Project

Location: Springfield, Virginia

Engineering Company: Domain Engineer Inc.
Tulsa, OK

Problem: Washington Gas purchases most of the Liquid Natural Gas (LNG) from overseas. Because of the chemical composition of the gas the elastomeric seals in the pipe line began to deteriorate causing shrinkage and becoming brittle. The seals lost their ability to seal properly and there was increase in gas leaks in their pipe line. The amount of leaks found by the consumers as well as from Washington Gas own findings was enough to cause great concern. Something had to be done.

Solution: There were two solutions presented to solve the problem. The first solution was to replace all of the seal, and o-rings located in the entire pipeline. This solution was rejected immediately. The cost of material, labor, and time required was such that it was determined not to be a viable solution.

The second option was to inject a chemical that would cause the “reconditioning” of the elastomers currently in the pipe line. This option was to be investigated and determined to be the best solution and the most cost effective approach. The next step was to determine the best chemical to inject that would “recondition” the elastomers as well as, not reduce the natural gas burning efficiencies. Through a series of testing and evaluations Hexane was determined to be the chemical to inject into the pipe line and get the optimal results required to return the o-rings to their original sealing capabilities.

The next step was to determine the type of nozzle required to get the best atomization of the hexane injected into the pipeline. Once the flow and pressure were determined, the equipment needed to be selected. Hexane’s chemical composition limited the type of pumps that could be used. It was determined that the pump needed to be a; sealless, nonpulsating, able to pump non-lubricating fluids was required. The Hydra-Cell pump was selected because of the entire requirement list above but also because of the ability to run dry. The metering capabilities and overall cost of the pump was also considered.

The Hexane injected system was installed in early 2006. Although there were some initial system problems primarily related to the vapor pressure of Hexane, the results have been tremendous. In the first couple of weeks the number of leaks found by the consumers as well as Washington Gas has dropped by 70 -80 % (Check to verify). The results have been so variable the Washington Gas is currently working on two additional sites to install the Hexane injection systems and plan on 10 more additional locations.

Application Information:

Pump Model: D10SKRGSNEMB

Of Pumps: 3

GPM: 6 (each)

Pressure: 900 PSI max

Temperature: 100 deg F Max

Horsepower Required: 5

Pump RPM: 1800

Duty Cycle: 24/7

Note:

Each new site will require different model pumps, which is determined by the amount of gas in the line. The next site we are looking H25 pumps.

Site pictures:

