

CATCO CATALYTIC HEATER PREVENTS FREEZING ON A LARGE PRESSURE DROP FOR GAS LIFT WELL IN SANTA ELENA

INTRODUCTION

The Catco Catalytic Heater is designed to prevent freezing in valves and regulators, which can occur due to low ambient temperatures or high pressure drops.

In this field study, we'll demonstrate how the heater performed on a gas lift operation with a large pressure drop in Santa Elena, Ecuador.

PROBLEM

Gas Lift is a form of artificial lift that uses compressed gas to help "lift" resources from a well. The gas is injected into the production pipeline from a surface compressor towards the high pressure fluid column as a source of external power.

Gas is injected at a relatively high pressure of 250 PSI to be able to displace the column of fluid. This reduces its weight so the reservoir energy will be sufficient to transport the oil from the bottom of the well to the surface. This cycle is repeated as many times as necessary to optimize oil production.

An oil and gas producer in Santa Elena, Ecuador, was experiencing freezing in their gas lines and gas pressure regulator because of the pressure drop from 3700 PSI at the compressor down to 200 PSI for the injection.

The Joule-Thomson effect states that for every 100 PSI drop in pressure, gas experiences a 7 degree (F) drop in temperature. This means that with this pressure drop, the temperature of their gas was going down approximately 245 degrees (F). This temperature drop was causing the freezing.

SOLUTION

We helped the customer switch from a ½" diameter to a 1" High Pressure Control Valve with Pressure Reducing Package and a Catco Heater for the high drop pressure and low temperature the process demanded.

Date of Installation: 2012

Products Installed: 1" High Pressure Control Valve with Pressure Reducing Package and Catco Heater

Production Details:

- Production Type: Artificial Lift (Gas Lift Injection)
- Solids in fluid: LOW
- Corrosiveness: LOW
- Upstream Pressure: #3,700 PSI
- Downstream Pressure: #200 PSI



RESULTS

As of 2023, the control valve and Catco were still operating on the gas lift well. The producer reported the valve was working with high performance and accuracy without any freezing.