



## INTRODUCTION

Poza Rica is one of the main Oil & Gas regions in Mexico and is located in the PEMEX North Region. Overall the Poza Rica region has 1,000 Intermittent Wells.

Intermittent wells are operated by a pneumatic Gap Control. This system closes the well with the purpose of building internal well pressure.

Once the pressure has reached the high pressure setpoint, then the production line is open to release the pressure until the well reaches the low pressure set point. This system increases production of the well while making it more efficient.

## PROBLEM

Current Gap Controllers in Poza Rica are pneumatic. Since these wells are remote, with no available supply gas, PEMEX uses LPG as supply gas for these systems. Supplying LPG tanks has been part of PEMEX daily activities, and over time it has added complexity to their operations.

In addition, if the system stops working for some reason there is no way to identify a gap control failure. Therefore, a pneumatic gap control system needs daily onsite supervision.

## PRODUCTION DETAILS

Industry: Upstream  
Place: Poza Rica, Mexico  
Date: January 2018  
Application: Oil Production in Intermittent Wells  
Production: Oil: 3 BPD  
Gas: 8.3 MMSCFD

### PROCESS DATA

Maximum Upstream Pressure: 950 psi  
Downstream Pressure: 10 psi  
Flow: Variable  
Temperature: 45 C  
Density: 6 API

### AUTOMATION CAPABILITIES

Solar Panels  
Modbus Communication  
SCADA and Remote Control

### PILOT CONTROL SETTINGS

Pressure Units: psi  
Sensor: 2000 Psi Max Pressure / 0 Psi Minimum Pressure  
Control Setting: Gap Control Low 15 psi / High: 255 psi  
Setpoints: Pressure to Close 15 psi / Pressure to Open: 256 psi

### ACTUATOR SETTINGS

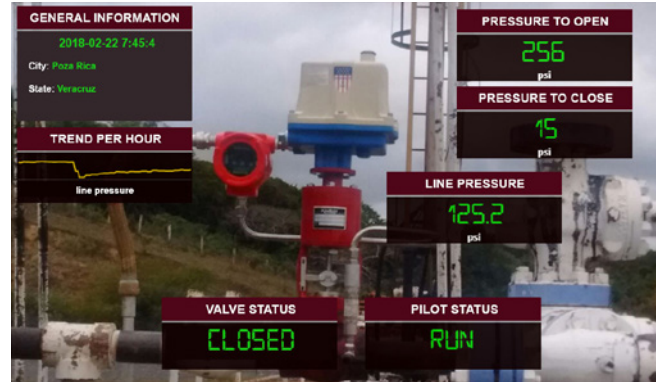
Power Failure: Normally Open  
Signal Failure: Normally Open  
Energy Save Mode  
Loss of Actuator Power: Park  
Operation: Modulating 4-20 mA

## SOLUTION

The Kimray Electric Pilot has a Gap Control function that accurately controls a control valve by sending a 4-20 mA signal. The Electric Pilot Board has a Modbus port that allows the pilot to communicate to a control room to either report process data or receive control commands.

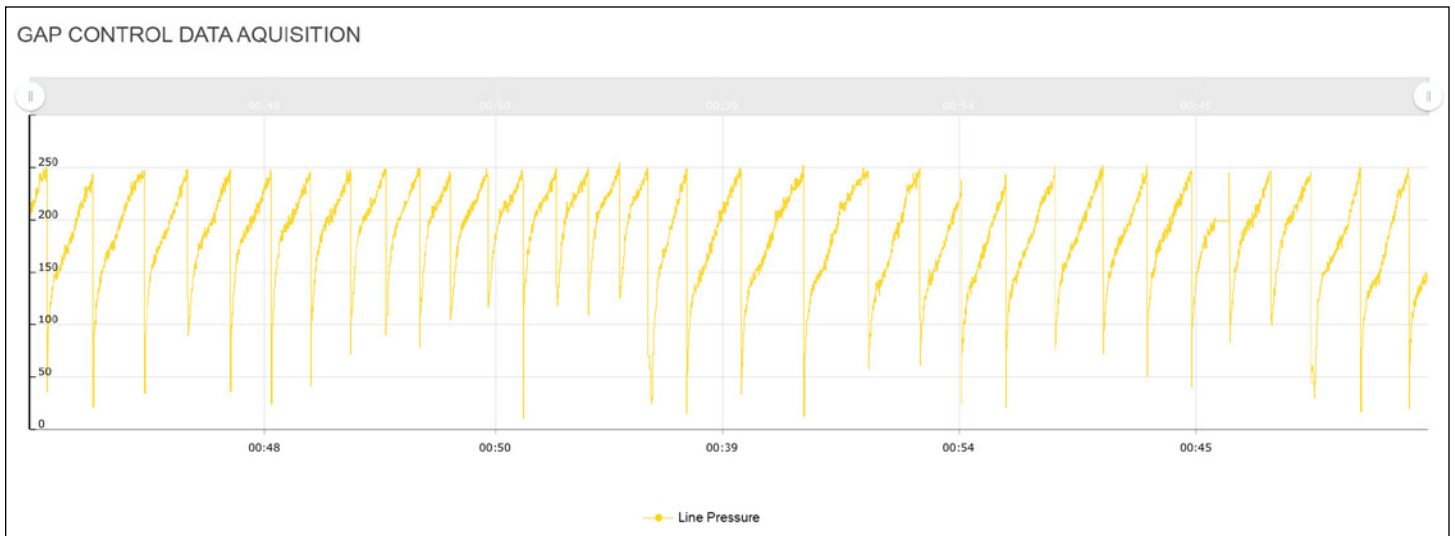
The Electric Pilot works in combination with a Valvcon Electric Actuator, which contains a built-in battery used to assure fail-safe operations. The Valvcon Actuator also has a manual override function that allows the operators to manually open or close the valve in case of emergency.

The installation of the Electric Pilot brings reliability, efficiency and the reduction of emissions. It also gives PEMEX the option for remote monitoring and control through Modbus. This real-time system allows PEMEX to carefully maintain operations while acting immediately in case of any emergency.



## KIMRAY PRODUCTS USED

Electric Pilot, Rotary to Linear Converter R2L, Valvcon Electric Actuator, Pressure Sensor



GAP CONTROL DATA AQUISITION SYSTEM