

Remote Pumping Station Monitoring

Company: Pemex, Coatzacoalcos, Mexico

Contact: Martin Fernandez Corza
Company: Dyconet / Pemex
Work: 019212139010 Cell: 044 9211218735
Email: dyconet@prodigy.net.mx
(Martin Fernandez Corza works for Pemex, and is Spanish speaking only)

Eduardo Andrade
Company: Power & Control Suppliers
Cell: 045 99 33 96 32 41
Email: eandrade1975@prodigy.net.mx
(Eduardo Andrade works for Power & Control, and is bilingual)

Introduction

Petroleos Mexicanos (PEMEX) is Mexico's state-owned petroleum company. It is the tenth largest oil company in the world in terms of revenue, and ranked thirty-fourth in Fortune 500 companies. The company controls the entire oil industry for the nation of Mexico. This includes extraction, storage, refining and marketing to the public.

Objective

The engineers at PEMEX needed to monitor 200+ different remote pumping stations and compressors. The pumping stations are scattered over a 180 square mile area that is covered in very dense forest growth, making the transmission of wireless signals a real challenge. The pumping stations are physically clustered into four groups. Each group has approximately 50 pumping/monitoring locations. These groups are Reforma, Castano, Planta de Agua Samaria, and Comcalcalo. Each of the remote pumping locations covers an area of 37 square miles. These four remote areas with pumping stations need to send signals back to a central office location.

Solution

Weidmuller designed a solution that uses wireless Ethernet modems (WI-MOD-E) at each pumping location (Level 3) to acquire and transmit the requested information to a central point in each of the four pumping areas (Level 2). Another identical Ethernet modem is used to transmit all the needed information from each central point in each pumping area back to the Central Control office (Level 1). The Weidmuller modems, with 300mW broadcast power, were the only ones with a powerful enough transmitter to penetrate the dense forest growth with a clear and reliable wireless signal.

Each wireless Ethernet modem communicates between each pump location (Level 3) to each central pumping section (Level 2) and back to the Central Office (Level 1) via ModBus TCP. The components used in this installation include 250 Ethernet modems (WI-MOD-E), 5 unmanaged Ethernet switches, 5 Ethernet routers, 250 DC-DC converting power supplies (to isolate radios from the rest of the system) and all necessary terminal and fuse blocks to complete the system connectivity.



Outcome

PEMEX now has a simple easy-to-use solution for monitoring their remote pumping stations. They were able to deploy this solution quickly, and it was up and running in a matter of months. Training and maintenance is streamlined because the solution employs one type of product, using one software interface for all three levels of their system, from 200+ remote stations to the central office location. The wireless products were coupled with other Weidmüller components, providing a complete and seamless system that is easy for PEMEX to maintain and support.

