

Emerson delivers best in class vapor recovery system for Atlas Pipeline

Results

- Unique oil system stabilizer design protects compressor from hydrocarbon dilution
- Automation allows for optimized operation based on inlet gas composition
- Leak-free, zero emissions hermetic scroll compressor
- Eliminated need for oil day tank required with other compressor technologies
- Eliminated operator intervention typically needed with changing operating conditions
- Variable speed operation precisely controls atmospheric tank pressures

Application

Rich gas tank vapor recovery, as part of 160 MMCFD midstream gas processing facility with natural gas liquids (NGL) extraction and storage.

Customer

Atlas Pipeline, Velma, OK, one of the nation's largest diversified midstream companies.

Challenge

Shale gas processing presents multiple challenges and requires continuous diligence to keep a facility running at optimal conditions. Even small disturbances and daily ambient temperature fluctuations can have a large impact on the NGL production efficiency. Rich vapors from liquid storage tanks contained in excess of 20 GPM of C3+ with an equivalent heating value of 2500 MMBTU.



The Atlas Velma gas plant has provided very positive feedback on the performance the Emerson vapor recovery system. The facility has significantly reduced operator intervention needs and is reliably capturing valuable NGL tank vapors.



The existing vapor recovery system design for this gas plant led to repeat failures due to hydrocarbon dilution, ultimately leading to bearing failures. The high compressor system oil carryover required constant attention, maintenance, and resulted in significant unplanned downtime.

Solution

The Atlas facility required a tank vapor recovery unit (VRU) that would operate unattended. The system needed to be oil and gas emissions free, and eliminate wasteful power consumption due to past need for bypass operation.

Emerson developed a unique process design and automation package which incorporates temperature and pressure control to eliminate hydrocarbon dilution of the compressor oil system. A standard package design was developed to capture and process operating conditions most typically found at shale gas production and processing facilities. The design is capable of recovering up to 95 mcf/d of rich gas vapor at discharge pressures up to 150 psig. The specific installation required frequent cycling and occasional standby operation.

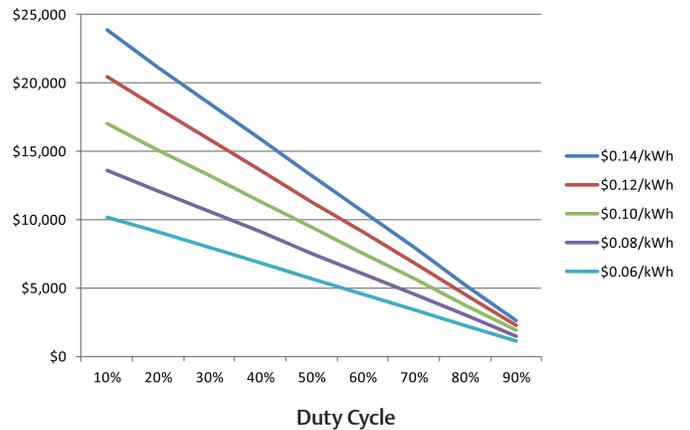
Continuous improvements in system design by Emerson have enabled the unique characteristics of its scroll compressor to be fully realized. The compressor system automation and variable speed operation allow for infinite duty cycles from 0-100%. The variable speed controls ensure constant tank pressure control at near atmospheric inlet conditions, independent of gas volumes produced.

Resources

Learn more about Copeland Scroll™ gas compression from Emerson: EmersonClimate.com/Hydrocarbon_Processing



Scroll VRU Annual Power Savings



Assumption: 30 HP package net savings from avoided bypass operation

Emerson VRU system features:

Standard system design – Eliminates need for various sized units in your operation. One design covers flow conditions through 95 mcf/d.

Precise, automated pressure control – Compressor discharge pressure automatically controlled using variable-speed operation from 2400-4800 rpm.

Low maintenance requirements – Copeland Scroll compressors are hermetically sealed (welded) and have no shaft seals, drive belts, lube points or system oil pump.

Reliable operation and availability – Compressors are immediately available, even after extended periods of shutdown.

Quiet and emissions free operation – Designed for low noise, the system can be installed in environmentally sensitive or more heavily populated areas.

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