

Independent producer deploys emission-free tank vapor recovery

Oil and Gas

Result

- Copeland Scroll compression has delivered nearly 100% availability
- Planned compressor maintenance reduced from weekly to annually
- Eliminated compressor-related oxygen spikes and associated production shut-in events
- Zero gas emissions from compressor and module components
- Tank pressures precisely controlled using variable speed compressor operation

Application

Oil stock tank vapor recovery unit. 2,000 barrel tank battery with 1,000+ barrel per day production. High-BTU vent gas recovery to facilitate emissions compliance.

Customer

Devon energy one of the largest independent oil and gas producers and processors of natural gas and natural gas liquids in North America. Site in eastern New Mexico.

Challenge

Increased regulatory pressure and record natural gas prices have driven producers to install vapor recovery systems to capture valuable, rich hydrocarbon vapors. Tightening federal and state regulations on the emission of these potent greenhouse gases and pollutants have led producers to think about new ways to reliably capture these vapors and achieve emission compliance.



“The hermetically-sealed Copeland Scroll eliminates the entry of oxygen into the system. Additionally, Scroll offers high runtime efficiency and runs quietly.”

Health & Safety Engineer,
Devon Energy



Also, the challenge was to find low-maintenance vapor recovery options that would not burden the workforce. The extreme fluctuations in daily and seasonal temperature conditions of New Mexico provided an excellent environment for proving out the reliability of the Scroll package. This producer realized that the volume of gas coming off a storage tank would vary greatly, making it difficult to precisely control tank vapor pressure without excessive compressor cycling and operator intervention. Because of the large number of oil field storage tanks, and the rising shortage of field technicians, small vapor recovery packages must be maintenance-free to be considered viable. The traditional approach has been small rotary vane, air screws, or reciprocating compressors. These shaft-driven technologies are often maintenance intensive, have discharge pressure limitations, and possess shaft seals that leak gas.

Solution

During late 2007, Emerson worked to address this producer's high BTU tank vapor gas application. By Devon energy Emerson technology, Devon energy is realizing the unique benefits of Copeland Scroll compression, including:

Lower maintenance - Once-a-year planned maintenance for this application includes changing oil and installing new oil filters. With no belts, gears, couplers, alignments, shaft seals or lube points, the scroll package has delivered value by reliably compressing vapors and providing trouble free operation.

No emissions or leak points — The welded hermetic Copeland Scroll® design means no emissions, shaft seals, oxygen entry, or external moving parts often found in other oil field compression technologies.

Precise control of tank vapor pressure - Using variable speed suction pressure control, Copeland Scroll compression operates continuously without shutdown, even when put into full flow bypass.

Higher vapor collection reliability — reciprocating, screw and rotary vane technologies are vulnerable to the effects of extensive cycling associated with vapor recovery. The Copeland Scroll compressor design helps eliminate cycling related downtime and failures. Compliance-related downtime for this facility, at 1,000 barrels per day and \$100 per barrel, has an end market value of \$100,000 a day lost revenue.



Producers are looking for low-maintenance, emissions-free solutions for vapor recovery. Copeland Scroll® compressors can take low suction pressure and boost it to 70-275 psig, which gives producers more flexibility to changing field conditions.

Produced gas value

Average Daily Recovery Rate of 60 MCF. Assume 2,000 BTU vapor at \$8/MCF

Daily = 70 MCF × 2 (accounting for BTUs) × \$8/MCF = \$1120 daily

Monthly = \$1120/day × 30 days = \$33,600 monthly

Annually = \$33,600/month × 12 months = \$403,200 annually

Resources

To learn more about Copeland Scroll® compression solutions visit EmersonClimate.com/oil_gas

EmersonClimate.com