Recovery of Flash Gas From Storage Tanks at an Offshore Production Platform Using Scroll Compression Technology

Presented by

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Case Study Background

- Major independent offshore GOM platform refurbishment
Scroll Compression Technology

- Typical A/C compressor
- Hermetically sealed positive displacement machine using two interleaved scrolls – electric driven
- In VRU applications since 2004
How does Scroll Compression work?
...continuous orbiting motion

“Fixed Scroll”
(Connected to compressor body)

“Orbiting Scroll”
(Connected to crankshaft and orbits rather than rotates)
Copeland Scroll® Compressor

Copeland Scroll Compressor Technology

Lower Counter Weight
Lower Bearing
Injection Port for Cooled Oil
Aluminum Wound Stator
Gas Suction
Eccentric Shaft
Power Terminal Box
Oldham coupling
Fixed Scroll
Orbiting Scroll
Upper Counter Weight
Gas Discharge
Rotor
Main Bearing

Aluminum Oil Cooler w/Fans (2)
Inlet Check Valve (2)
High Discharge Gas Pressure Switch
High Discharge Gas Temp Switch
Gas Flow Bypass Valve
Fan Speed Thermistor
Oil Circuit Filter
Oil Circuit Thermal Bypass Valve
First Stage Oil Separator
Copeland Scroll Compressors (2) For Class I, Division II
Oil Level Site Tube
Operating Map for Dual Copeland Scroll R
Gas Compression Modules

NOTE: SZV44, SZV56
Suction Pressures >10 PSIG
Achievable by Replacing Existing Low Pressure Switch
Benefits of Scroll Compression for Vapor Recovery

- Hermetically sealed design
- Smaller footprint
- Less maintenance, more run time
- Low noise level
- Lower overall cost than typical VRU
Application of Scroll Technology

- Recovering gas from oil storage tanks and heater treater and discharging pressurized gas to larger compressor
- VRU system requires electrical power and purge gas for recycle
- High molecular weight gas recovery
COMM Scroll Compressor Package

- 4’ wide x 8’ long skid
- Inlet gas scrubber and aftercoolers
- Control panel with PLC and variable frequency drive (VFD)
- Volume capacity 200,000 scf per day
Offshore System Modifications (API RP 14C)

- Three part epoxy coating
- Safety system additions
  - Scrubber high level alarm
  - High discharge pressure alarm
  - Low suction pressure alarm
  - High pressure alarm on tanks
- Located control panels in MCC
Investment Summary

Standard VRU package $135,000
Saltwater modifications $  15,000
Safety modifications $     5,000
Installation $   40,000
Startup/Commissioning $     6,000

Total Investment $201,000
Results

Average recovery – 58,000 scf per day
Peak recovery rate – 215,000 scf per day

Simple Payout – 15 months
Summary

- Lowers emissions of VOCs and GHGs
- Lower maintenance costs
- Requires small footprint
- Cost effective and efficient VRU for offshore environment
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