Install Flares

Technology/Practice Overview

Description

Remote, unmanned production sites and compressor stations may vent low-pressure natural gas and vapors from storage tanks and other onsite equipment to the atmosphere. These gases, which contain methane and often volatile organic compounds (VOC), hydrogen sulfide, and hazardous air pollutants (HAP), can pose an environmental, health, and safety hazard. In order to reduce these emissions, Partners have reported installing flares to combust these gases instead of venting them to the atmosphere.

Partners have applied flaring technology typically consisting of a small flare stack with one or two pilots. Emissions sources, such as tank vents, compressor blowdown lines, low-pressure separator vents, overpressure relief valves, and other vent streams are piped directly to the flare.

Operating Requirements

If the heat content of the stream is below 300 Btu per scf, auxiliary fuel is needed. The average pilot gas consumption is 70 scf per hour per pilot burner.

Applicability

Flares can be applied to all point source vented emissions of combustible gas with minimal sulfur content.

Methane Emissions

The methane emissions reduction is uniquely dependent on the types and sizes of sources and the methane content of the flared gas. Wellhead gas may range from 70 to 90 percent methane while crude oil production tank vapors

- ☐ Compressors/Engines
- ☐ Dehydrators
- ☐ Directed Inspection & Maintenance
- ☐ Pipelines
- ☐ Pneumatics/Controls
- ☐ Tanks
- ☐ Valves
- ☐ Wells
- ■ Other

Applicable Sector(s)

- ■ Production
- ☐ Processing
- ■ Transmission
- ☐ Distribution

Other Related PROs:

Install Electronic Flare Ignition Devices, PRO No. 903

Economic and Environmental Benefits

Methane Savings

Estimated annual methane emission reductions	*2,000 Mcf per flare (with a single pilot)*

Economic Evaluation

Estimated Gas Price	Annual Methane Savings	Value of Annual Gas Savings*	Estimated Implementation Cost	Incremental Operating Cost	Payback (months)
$7.00/Mcf	2,000 Mcf	N/A	$21,000	$4,200	None
$5.00/Mcf	2,000 Mcf	N/A	$21,000	$3,000	None
$3.00/Mcf	2,000 Mcf	N/A	$21,000	$1,800	None

** Because the natural gas is flared, there are no economic gas savings associated with this activity.*

Additional Benefits

- Safer operations

Install Flares (Cont'd)

may be as low as 50 percent methane. Partners have reported production site application for tank vents, relief valves, and compressor blow-down at 2,000 Mcf per year, low-pressure separators at 4,000 Mcf per year, and condensate tanks at 36,000 Mcf per year.

Economic Analysis

Basis for Costs and Emissions Savings

Methane emissions reductions of 2,000 Mcf per year apply to a single flare with a single pilot. Costs for a flare are estimated to be $3,000 based on partner experiences (which vary significantly and are often between $1,000 and $5,000). In addition, and there is a fuel cost of $1,800 per year for each pilot (at $3 per Mcf of gas).

Discussion

Flares are commonly installed on higher-pressure blowdown or emergency pressure relief valves for safety reasons. Low-pressure gas installations have been justified by environmental emissions control. There are no revenues from the gas as it is destroyed through combustion.

Methane Content of Natural Gas

The average methane content of natural gas varies by natural gas industry sector. The Natural Gas STAR Program assumes the following methane content of natural gas when estimating methane savings for Partner Reported Opportunities.

Production	79 %
Processing	87 %
Transmission and Distribution	94 %

EPA provides the suggested methane emissions estimating methods contained in this document as a tool to develop basic methane emissions estimates only. As regulatory reporting demands a higher-level of accuracy, the methane emission estimating methods and terminology contained in this document may not conform to the Greenhouse Gas Reporting Rule, 40 CFR Part 98, Subpart W methods or those in other EPA regulations.