



Install BASO[®] Valves



Technology/Practice Overview

Description

Crude oil heater-treaters, gas dehydrators, and gas heaters burn natural gas in air-aspirated burners to provide processing heat. Strong wind gusts can blow out the pilot flame resulting in methane emissions. Gas leaks will persist until the pilot is relit.

Partners have reported using BASO[®] valves to prevent this gas loss and methane emissions. BASO[®] valves are snap-action valves activated by a thermocouple that senses the pilot flame temperature. When the flame is extinguished, the valve automatically shuts off the fuel gas flow, preventing continued fuel loss and methane emissions. These valves are particularly effective at remote, unmanned production sites.

Operating Requirements

The maximum inlet pilot gas pressure allowed is ½ psig.

Applicability

This technology is applicable on all gas-fired heaters.

Methane Emissions

The methane emission savings are calculated for a fuel gas rate that heats crude oil to 100° F, assuming 75 percent efficiency. One Partner reported methane savings of 222 Mcf per year for a single installation.

Economic Analysis

Basis for Costs and Emissions Savings

Methane emissions savings of 203 Mcf per year are estimated for installing a

- 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 203 Mcf per valve

Economic Evaluation

Estimated Gas Price	Annual Methane Savings	Value of Annual Gas Savings*	Estimated Implementation Cost	Incremental Operating Cost	Payback (months)
\$7.00/Mcf	203 Mcf	\$1,500	\$100	\$0	1 Months
\$5.00/Mcf	203 Mcf	\$1,100	\$100	\$0	2 Months
\$3.00/Mcf	203 Mcf	\$650	\$100	\$0	2 Months

* Whole gas savings are calculated using a conversion factor of 94% methane in pipeline quality natural gas.

Additional Benefits

- Operations and maintenance cost savings
- Improved safety

Install BASO[®] Valves (Cont'd)

BASO[®] valve on a 1,000 bbl per day heater-treater that experiences a flameout period of 10 days annually. It is estimated that each BASO[®] valve costs less than \$100.

Discussion

This technology has a quick payback. By installing BASO[®] valves, the fuel gas supply for pilot flames is shut off if the flame goes out, preventing methane emissions and loss of valuable fuel gas. The economic benefits are complemented by improved safety.

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 %