Lower Heater—Treater Temperature

NaturalGas EPA POLLUTION PREVENTER

Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 906

Applicable sector(s):

■ Production ☐ Processing ☐ Transmission and Distribution

Partners reporting this PRO: Marathon Oil Company

Other related PROs: Install BASO® Valves

Compressors/Engines	☐
Dehydrators	☐
Pipelines	☐
Pneumatics/Controls	☐
Tanks	☐
Valves	☐
Wells	☐
Other	■

Technology/Practice Overview

Description

Heater-treaters are used to treat oil emulsions, which are stable mixtures of oil, solids, and water. These units use thermal, gravitational, mechanical, and sometimes chemical methods to break the emulsions and separate the crude oil from water. Elevated temperature is particularly effective in lowering oil viscosity and promoting phase separation, but requires fuel gas and causes volatile hydrocarbons, including methane, to vaporize and escape to the atmosphere from production tanks.

Methane Savings: 142 Mcf per year

Costs

Capital Costs (including installation)

☐ <$1,000 ■ $1,000 – $10,000 ☐ >$10,000

Operating and Maintenance Costs (annual)

☐ <$100 ■ $100-$1,000 ☐ >$1,000

Payback (Years)

■ 0–1 ☐ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Partners find that heater-treater temperatures at remote sites may be higher than necessary, resulting in increased methane emissions. Commonly, the reason for this is that operators need to reduce the chance of having a high water content in the produced oil and manpower limitations do not allow for constant monitoring at remote sites. Field personnel, consequently, are inclined to operate the equipment at levels that cause the least problems, but also result in higher than necessary emissions. Identifying and using the lowest practical heater-treater temperature capable of meeting product quality standards and other treatment factors can reduce vented emissions.

Operating Requirements

The combination of treatment parameters must meet an oil specification set by individual companies. Additional training and support will be required to convince company personnel of the merits of reducing heater-treater operating temperatures.

Applicability

This practice applies to all heater-treater operations.

Methane Emissions Reductions

Methane emissions reductions will be a function of temperature reduction, throughput, and the extent to which other treating parameters and product quality can compensate for lower temperature. One partner achieved 142 Mcf per year average savings in each of two applications.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 142 Mcf per year are representative of partner reported savings per heater-treater unit. It is important to note that methane emissions reductions will vary from site-to-site, depending on the size of the heater-treater, the temperature reduction, and the throughput.

Discussion

This practice can pay back quickly in incremental labor and fuel gas savings, the principal benefits. While savings in methane emissions are incidental, fuel gas savings may be more substantial. The practice may require engineering or field costs to determine the lowest heater-treater temperature that meets company criteria and provides trouble free operations. This could range from 2 to 6 days at $20 per hour for one operator or from $320 to $960. There also might be a higher de-emulsifier chemical cost to compensate for lower treating temperatures.