Non-CO$_2$ Greenhouse Gases: Methane

Source/Sectors: Natural Gas Systems (Field Production; Processing; Transmission)

Technology: Reducing the glycol circulation rates in dehydrators (A.1.2.1.6; A.1.2.3.4)

Description of the Technology:
In the United States and worldwide, many efforts have been made to identify and implement mitigation options to reduce methane emissions from the natural gas sector (USEPA, 2003). For example, the Natural Gas STAR program is a voluntary partnership between US EPA and the oil and gas industry to identify and implement cost-effective technologies and measures to reduce methane emissions. The measures to reduce methane emissions from the natural gas systems can be grouped into the following mitigation strategies: prevention, recovery and re-injection, recovery and utilization, and recovery and incineration (Hendriks & de Jager, 2001).

Tri-ethylene glycol (TEG) is circulated through dehydrators to absorb and remove water from the gas stream before the gas enters the transmission pipeline. TEG also absorbs some CH$_4$ that is vented. Reducing the TEG circulation rate to an optimal level will reduce CH$_4$ emissions (USEPA, 2004; IEA, 2003).

Effectiveness: Good
Implementability: Good
Reliability: Good
Maturity: Good

Environmental Benefits: It reduces methane emissions.

Cost Effectiveness:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Lifetime (yrs)</th>
<th>MP (%)</th>
<th>RE (%)</th>
<th>TA (%)</th>
<th>Capital cost</th>
<th>Annual cost</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducing glycol circulation rates in dehydrators$^1$</td>
<td>1</td>
<td>50</td>
<td>31</td>
<td>1</td>
<td>$0.00</td>
<td>$1.72</td>
<td>$8.21</td>
</tr>
</tbody>
</table>

Note: MP: market penetration; RE: reduction efficiency; TA: technical applicability; costs are in year 2000 US$/MT$_{CO2-Eq.}$


Industry Acceptance Level: Good

Limitations: Not applicable to Kimray pumps.

Sources of Information:


