Engineered Concepts, LLC

New Technology Overview

Natural Gas STAR Producer’s Technology Transfer Workshop

September 11, 2007
New Technology Now Available

- Quantum Leap Natural Gas Dehydration Technology (QLD)
What is the QLD Process?

First TEG dehydration process specifically designed

- To capture and convert virtually all hydrocarbon emissions to revenue
- For incorporation into or retro-fitted to dehydration packages
- To reduce total operating expenses
What is the QLD Process?

First TEG dehydration process specifically designed

- To reduce maintenance
- To improve operating safety
- To be used in any climate
QLD is verified by the EPA to eliminate

- more than 99.74% of HAPs
- virtually all VOCs and Methane
The QLD Process

• Field tested for over three years in two pilot plants

• Verification tested by the Greenhouse Gas Technology Center, Southern Research Institute in cooperation with the EPA
  - Testing completed in 2003
  - Report issued in September 2003
Retrofit QLD equipped with Direct Drive Pumping System

Jonah Field near Pinedale, Wyoming
Direct Drive Pumping System

- Kimray pumps are very wasteful as large volumes of gas are required to power the pump.

- The amount of gas required to power the pump is more than can be used by the dehydration process as fuel.
### GAS CONSUMPTION for KIMRAY PV PUMPS

<table>
<thead>
<tr>
<th>Operating Pressure - p.s.i.g.</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
<th>1000</th>
<th>1100</th>
<th>1200</th>
<th>1300</th>
<th>1400</th>
<th>1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu. Ft./Gallon @ 14.4 &amp; 60°F</td>
<td>1.7</td>
<td>2.3</td>
<td>2.8</td>
<td>3.4</td>
<td>3.9</td>
<td>4.5</td>
<td>5.0</td>
<td>5.6</td>
<td>6.1</td>
<td>6.7</td>
<td>7.2</td>
<td>7.9</td>
<td>8.3</td>
</tr>
</tbody>
</table>

### GAS CONSUMPTION for KIMRAY SC PUMPS

<table>
<thead>
<tr>
<th>Operating Pressure - p.s.i.g.</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu. Ft./Gallon @ 14.4 &amp; 60°F</td>
<td>1.0</td>
<td>1.9</td>
<td>2.8</td>
<td>3.7</td>
</tr>
</tbody>
</table>
Direct Drive Pumping System

- Provides power to drive the Kimray pump without using wet glycol from the process.

- Eliminates gases vented from the Kimray pump that are used to provide the power to operate the pump.
Direct Drive Pumping System

- Excess gas is usually vented or flared. Rarely are facilities provided to capture this gas.

- Only gases absorbed by the glycol are vented by the Kimray pump - identical to an electric pump.
Direct Drive Pumping System

- The Kimray pumps are controlled and operated exactly like pumps without the Direct Drive Pumping System. Operators are already familiar with operations and maintenance.

- Glycol used to power the Kimray pump is cleaner than the glycol from the process. Pumps last longer and experience less maintenance issues.
Direct Drive Pumping System

- If power is lost the unit can switch back to normal Kimray pump operation while repairs are made. This cuts lost production to a minimum and alleviates start up concerns - particularly in cold weather.