Waste Heat Recovery

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Knight INC.
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<table>
<thead>
<tr>
<th>Company</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMIGT</td>
<td>165,466</td>
</tr>
<tr>
<td>TransColorado</td>
<td>33,720</td>
</tr>
<tr>
<td>KM Texas</td>
<td>96,465</td>
</tr>
<tr>
<td>KM Tejas</td>
<td>78,502</td>
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<tr>
<td>NGPL</td>
<td>1,011,656</td>
</tr>
<tr>
<td>Trailblazer</td>
<td>74,948</td>
</tr>
<tr>
<td>Total</td>
<td>1,460,757</td>
</tr>
</tbody>
</table>
Compressor Heat Recovery to Power - "Rules of Thumb"

- Gas Turbines are the only viable near-term option
- Minimum of 15,000 to 20,000 HP
  - More than three (3) units make Heat Recovery uneconomical unless you have more HP
- Minimum Load Factor of 60%
### Summary of Energy Use for One Engine Driven Compressor

<table>
<thead>
<tr>
<th>Loss Type</th>
<th>Percentage</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work done by Compression</td>
<td>26.6%</td>
<td>812.8 HP</td>
</tr>
<tr>
<td>Exhaust Gas Losses</td>
<td>33.5%</td>
<td>1,022.0 HP</td>
</tr>
<tr>
<td>Jacket Cooling Water Losses</td>
<td>18.5%</td>
<td>564.9 HP</td>
</tr>
<tr>
<td>Lube Oil Cooling Looses</td>
<td>20.7%</td>
<td>630.0 HP</td>
</tr>
<tr>
<td>Heat Leak Losses</td>
<td>0.2%</td>
<td>5.0 HP</td>
</tr>
<tr>
<td>Mechanical Friction Losses</td>
<td>0.5%</td>
<td>16.3 HP</td>
</tr>
<tr>
<td><strong>Total Compressor Engine Power</strong></td>
<td></td>
<td><strong>3,051.0 HP</strong></td>
</tr>
</tbody>
</table>

Source: SwRI
<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work to the Compressor</td>
<td>27.1%</td>
<td>4,124</td>
</tr>
<tr>
<td>Heat Losses to Exhaust, Lube and Seal Oil, etc.</td>
<td>71.9%</td>
<td>10,962</td>
</tr>
<tr>
<td>Auxiliary Pump and Fan</td>
<td>4.0%</td>
<td>56</td>
</tr>
<tr>
<td>Mechanical Friction Losses</td>
<td>6.0%</td>
<td>82</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>15,224</strong></td>
</tr>
</tbody>
</table>

Source: SwRI
KMIGT/Trans Colorado

- 165,466 HP/33,720 HP
- Largest Turbine is a Centaur
- No Turbine stations meeting the minimum requirement
KM Texas/KM Tejas

- 96,465 HP/78,502
- Largest Turbine is a Taurus
- No Turbine stations meeting the minimum requirement
Of the 1,011,656 HP only three (3) stations meet the minimum Turbine HP requirement
  – Each has two (2) old aircraft derivative engines with high fuel rates

One (1) station has 24,500 HP (two units)
  – One (1) unit is being converted to electric drive this year

Two (2) stations have 24,000 HP (two units each)
  – One (1) unit at each station is scheduled to be converted to electric drive within the next five to seven years
  – Both stations operate less than the 60% rule of thumb

A fourth Station had one (1) unit converted to electric drive in 2006
  – Energy efficiency initiatives being undertaken at NGPL
Trailblazer

- 74,948 HP at three (3) stations
- Two (2) stations are electric stations
- Station 601 – Peetz, Colorado
  - Two (2) Mars 100
  - 10,000 HP each (site rated)
  - 60% run time
  - Just meets the minimum requirement for both HP and run time
  - Qualifies for Green Credits
Our Only Application to Date

- Out of almost 1.5 million HP, only one (1) station qualified for “Heat Recovery”
- Trailblazer and Ormat entered into a “Waste Host Agreement” in July of 2007
- Ormat entered into a “Power Purchase Agreement” with Highline Electric
- Ormat is in the Design, Procurement & Construction Phase
New Projects Under Construction

- Rockies Express/Entrega
  - Fourteen (14) mainline compressor stations
  - Thirty-six (36) units totaling 435,640 HP
    - Four stations totaling 140,000 HP are Electric Drive
    - Four stations totaling 118,610 HP are Recip
    - Six stations totaling 177,030 HP are Turbine
      - Two stations have a site rating of less than 15,000 HP
  - Now there are four (4) stations left
    - One with 3 units 30,930 ISO / 18,885 site rated HP
      - Marginal with three units / will depend on power purchase agreement
    - Three with 2 units 41,000 ISO, 31,500 site rated HP
Rockies Express and Ormat entered into a “Memorandum of Understanding” on July 30, 2007

- In order to give Ormat time to determine whether acceptable power purchase agreements and interconnection arrangements could be entered into to support the Recovered Energy Generation (REG) Projects, Rockies Express agreed to cooperate exclusively with Ormat in the development.
New Projects Under Construction

- MidContinent Express
  - Phase I
    - Two (2) Mainline compressor stations
    - Nine (9) units totaling 71,575 HP
  - Phase II
    - Two (2) additional compressor stations
    - Five (5) units totaling 30,675
  - Total
    - Fourteen (14) units totaling 102,250 HP
    - All Recips / No qualifying HP
Kinder Morgan Energy Partners/
Knight Inc.

- Over 2,000,000 HP analyzed
- Only One Station has qualified so far
- Four more stations are being pursued with Ormat
  - One is marginal
  - Three are prime candidates
- KM worked with Ormat in the early design phase to accommodate the potential installation of the REG System
  - Moved cable trays etc.
Summary

- Kinder Morgan supports Waste Heat Recovery where appropriate
- Kinder Morgan has been willing to share specific information with third party waste heat developers
- From a Regulatory perspective, Kinder Morgan believes that these facilities should be non-jurisdictional
  - We need to establish the load factor before we can determine whether or not we have a viable project