Tapping Unused Energy Potential Along Natural Gas Pipelines at Gas Compressor Stations
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Ormat Technologies (NYSE: “ORA”) is a leader in geothermal and recovered energy generation.

- Established in Hopkinton, Mass. in 1972
- Focus on Geothermal and Recovered Energy since 1984
- Headquartered in Reno, NV; Listed on the New York Stock Exchange (ORA)
  - The first pure play geothermal/REG company
  - Market cap US$1.33 Billion
  - Sales 2009 US$415 Million
- Owns and operates ~540 MW net worldwide
- Supplied more than 1,300 MW of geothermal and recovered energy power plants to 22 countries
- Vertically integrated: R&D, drilling & development, engineering, manufacturing, installation, O&M

Ormat Technologies is a leader in geothermal and recovered energy generation.
A leader in geothermal and recovered energy generation

- **Recovered Energy Generation Sector**
  - Ormat owns and operates 53MW net of REG generation in the US
  - Constructed or supplied over 140MW of REG power plants world wide
  - Ormat has under construction another 7MW REG project in Nevada for third party ownership
  - ~ 96% of all REG supplied through April 2009 by Ormat are located in North America

- **Geothermal Sector**
  - Ormat owns and operates 370 MW of generation in the US
  - Constructed or supplied ~ 1,200 MW of geothermal power plants in 22 countries
  - Ormat makes up ~70% of geothermal capacity installed in the U.S. since 2000
Over 1300 MW of Field Proven Power Plants 100 Million Turbine Hours

Time… The Only True Test of Reliability

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>572-900 °F 300-482 °C</td>
<td>2.6 MW</td>
</tr>
<tr>
<td>360-572 °F 182-300 °C</td>
<td>7.4 MW</td>
</tr>
<tr>
<td>320-360 °F 160-182 °C</td>
<td>10 MW</td>
</tr>
<tr>
<td>300-320 °F 148-160 °C</td>
<td>11 MW</td>
</tr>
<tr>
<td>185-300°F 85-148°C</td>
<td>70 kW</td>
</tr>
</tbody>
</table>

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Approximately 1200MW of Geothermal Plants

92 MW Heber Binary Geothermal Complex, California

125 MW Upper Mahia Combined Geothermal Power Plant, Philippines

14 MW Sao Miguel Geothermal Power Plant, Azores Islands

18 MW Miravalle V Geothermal Plant, Costa Rica

85 MW Steamboat Geothermal Power Complex, Nevada

110 MW Mokai Geothermal Combined Cycle Plant, New Zealand
>130 MW of REG Plants

6.5MW Gold Creek REG Project, Canada

1.5MW Heidelberg Cement REG Project, Germany

4MW Enterprise REG Project, USA

8 x 6.5MW Northern Border Pipeline REG Projects, USA

4.5MW Trailblazer Pipeline REG Project, USA

6MW Pipeline REG Project, Canada
REG installations in North America
One Technology / Different Applications

Typical REG application

Typical Binary Geothermal application

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OEC Technology Benefits

- High aerodynamic turbine efficiency: 88% to 91%
- Moisture-free turbine expansion
- Fast on-site installation and implementation
- Reliable unattended operation with no steam operators
- Low operation and maintenance cost
- Rugged design for severe climates
- Field proven technology
- Environmentally friendly, with no fuel or water consumption
- Utilizes untapped resource to create additional energy
- Versatile application
- Handles fluctuating loads
- Black start and islanding mode capability
Example of installation at a gas compression station
Viable Waste Heat Recovery opportunities

• Gas Compressor stations
• Industrial processes
  • Cement production facilities
  • Biomass
  • Refineries
  • Other industrial waste heat processes
Tapping Unused Energy: Successful Projects

Successful projects utilizing untapped energy potential – North America only

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Projects</th>
<th>Gross Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Border Pipeline</td>
<td>10</td>
<td>65MW</td>
</tr>
<tr>
<td>Alliance Pipeline</td>
<td>4</td>
<td>23MW</td>
</tr>
<tr>
<td>Kinder Morgan gas pipelines</td>
<td>1</td>
<td>5MW</td>
</tr>
<tr>
<td>Neptune gas processing plant</td>
<td>1</td>
<td>5MW</td>
</tr>
<tr>
<td>Kern River Gas Transmission Pipeline*</td>
<td>1</td>
<td>7MW</td>
</tr>
<tr>
<td>Spectra gas pipeline</td>
<td>2</td>
<td>10MW</td>
</tr>
<tr>
<td>OPTI-Nexen gas refining facility</td>
<td>1</td>
<td>22MW</td>
</tr>
<tr>
<td>TransCanada Gas Pipeline</td>
<td>1</td>
<td>7MW</td>
</tr>
<tr>
<td>Arizona Public Service – solar</td>
<td>1</td>
<td>1MW</td>
</tr>
</tbody>
</table>

*Under Construction
Ormat’s Experience: First ORC on a Pipeline

Alberta - Canada

- First ORC commercial heat recovery project on a pipeline compressor station in the world –1999
- Heat source – RR RB211 GT
- Owned and operated by Maxim Power and TransCanada Pipeline
- Capacity: 5.8 MW net
- Electricity sold to Alberta Power Pool
- Designed to operate below -22°F
Ormat’s Experience: OREG projects

The Dakotas, Montana, Minnesota - USA

- Heat source – 10 separate compressor stations, each with a single RR RB211 GT
- All stations have been commissioned: Stations 3, 5, 6, 7, 8, 9, 10, 11, 12, 13
- 9 are owned and operated by Ormat
- Ormat Owned Capacity: 5.5 MW x 9 = 49.5 MW (Net)
- Operating conditions below -31°C
Total of 10 facilities installed on the pipeline

- First gas pipeline compressor station REG in the US

- Project details:
  - Gas turbines: 1 Rolls Royce RB211 per compressor station
  - Gas turbine rating: 26,000kW
  - One OEC/REG per site
  - REG net generation for sale: 5.5MW per site
  - Outdoor design for low temperature conditions
Important factors in considering projects

Impact of Pipeline operations:

- Compressor station run times
- Historic vs. future operations
- Compressor unit age, reliability, condition
- Shippers’ commitments
Important factors in considering projects

- Economic Disadvantages
  - Depressed electricity market prices
    - Continuing subsidies for coal projects
    - Low natural gas prices
  - Host fees for heat and site use
  - Project cost increases due to struggling financial market
  - O&M costs
  - Impacts related to pipeline operations
Important factors in considering projects

- Economic Disadvantages (continued)
  - Lack of Incentives
    - Need incentives in order to compete on a price basis with coal based projects or wind projects which already receive incentives such as
      - PTC’s
      - ITC’s
      - Manufacturing tax credits
      - State tax incentives

- Regulatory Disadvantages
  - Need to be qualified as a renewable energy resource on both a federal and state level
  - Need RPS standards to specifically address waste heat recovery
Important factors impacting project success

- Electrical interconnection to grid
- Design for site specific conditions
- Design for heat source conditions
- Incorporate host requirements:
Global Presence / Meeting the Needs of Customers in 71 Countries

Geothermal Power plants
Recovered Energy Generation (REG)
Remote Power Units

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Summary

- Numerous economic challenges in markets for waste heat recovery development
  - Depressed electricity market prices
  - Project cost increases due to struggling financial market
  - Lack of incentives that are received by other renewable technologies and even coal-based resources
  - Need for qualification as a renewable energy resource on both the state and federal level

- Must focus going forward on correcting these deficiencies
Questions

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