GeoEnergy Enterprises™

The GeoColumn™ Geothermal Heat Pump Company

Geothermal Energy Workshop
April 13, 2011

Presented By: Dave Cordts, Chief Operating Officer
Introduction

- GeoEnergy Enterprises, LLC
  - An Early Stage Business
  - Corporate, Manufacturing, Sales Offices located in New York, Research & Development Labs – Tennessee
  - Developed & Patented a novel, high-efficiency Geothermal HVAC System for use in residential and light commercial applications.

- SBU SBDC Client

- NYSERDA Grant Recipient

- Presenter and Program Committee Member for the AERTC Advanced Energy Conference

- LIPA Rebate Qualified Supplier of Geothermal HVAC Systems
Energy Demand is Growing at an “Unsustainable” Pace

Energy
• Conventional sources are unsustainable
• Costs continue to increase
• Conventional sources impact the environment
• Buildings consume a lot of it

US Primary Energy Consumption

- TRANSPORTATION 28%
- BUILDINGS 39%
- INDUSTRY 23%

We need a “SUSTAINABLE” Solution!
• An Oak Ridge National Lab (ORNL) study claims that Geothermal Heat Pumps have the ability to offset 35-40% of the projected growth in building energy consumption between now and 2030.

• DOE is tasking its teams with facilitating the deployment of 1,000,000 geothermal heat pumps per year by 2016 - as compared to the current roughly 100,000 units.

• The primary barriers to broad acceptance are high installed cost, uncertainty of scope of cost, and errors in design and installation.

  - ORNL study also sites the “lack of new technologies and techniques to improve GHP system cost and performance”.

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STATE OF THE ART

- All heat pumps work on the principal of the Carnot cycle and have essentially the same four components:
  - Compressor
  - Condenser
  - Evaporator
  - Expansion Device

- The vast majority of heat pumps in the market are Air-to-Air systems which suffer from the outdoor location of the evaporator or condenser coils.
  - Efficiencies of Carnot systems with various refrigerants as the working fluid decrease as the condensing / evaporating temperatures go to the extremes.

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The Hidden Resource!

Just below the surface of the earth, the temperature is virtually constant!

The World needs a System to Utilize this Energy!
Is Geothermal a Solution?

12’ Below the Grounds Surface, is an Untapped Constant Source of Energy.
The Geothermal Equation

Air Temp 0°F in Winter

Air Temp 95°F in Summer

Ground Temp 55-65°F

1 Unit of Electrical Energy = 4–6 Units of Geothermal Energy Produced
Existing Geothermal Technologies fall short of broad adoption due to their ground loop heat exchangers! The adoption of these heat exchangers typically accounts for over 33% of the entire installation cost and adds complexity and uncertainty.
GeoEnergy’s Patented GeoColumn is the Critical Difference!

- 2 - 3 Day Full System Deployment
- Predictable Performance
- High efficiency
- 25% Less System Cost
- Simple Payback: 3-7 years
- Environmentally Friendly
  - No glycol
  - No aquifer impact

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The GeoEnergy GeoColumn System
# GeoEnergy’s Residential Simple Payback Estimate

<table>
<thead>
<tr>
<th></th>
<th>Standard System (SEER 13-16)</th>
<th>GeoEnergy Enterprises System</th>
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</thead>
<tbody>
<tr>
<td>Installed Cost to Cust</td>
<td>$15,000</td>
<td>$30,000</td>
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<tr>
<td>30% Federal Tax Credit</td>
<td></td>
<td>$9,000</td>
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<tr>
<td>Less Tax Credit</td>
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<td>$21,000</td>
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<tr>
<td>Avg. Utl. Bill mo./yr.</td>
<td>$500/$6,000</td>
<td>$300/$3,600</td>
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<td>Annual Savings</td>
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<td>$2,400</td>
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<td>Simple Payback</td>
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<td>3 years</td>
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<tr>
<td>Carbon Saved</td>
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<td>9 metric tons (1.5 cars)</td>
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</tbody>
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Long Island New York, 2000 sq. ft. home
MILESTONES and PROJECTIONS

✓ Key Patent - Granted
✓ Prototypes - Phase II complete
✓ Field Tests – Excellent results
✓ Utility Rebates – LIPA in place
✓ NYSERDA Agreement in place
✓ Supply Chain – Vendors identified and participated in prototype phase
✓ UL/ETL Intertek Safety Listing
✓ AHRI/Energy Star Intertek 3 ton Unit Testing Complete
✓ First Order Installed – Data Monitoring underway

➢ Acquire AHRI/Energy Star for Entire Product Family
➢ Install Additional Data Acquisition Sites
➢ Production Capable
First Installation Pictures
Thank You!

For more Information about the Groundbreaking Geothermal GeoColumn HVAC Systems Visit our Website at:

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