Geothermal 2025: What will the GSHP Industry look like in ten years?

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Discussion Topics

- What will the Geothermal Heating and Cooling market look like in 2025?
- Where are we today?
- What are the strengths, weaknesses, opportunities and threats to our industry?
- What are the technological advances required to gain additional market share within the HVAC industry?
- How do we successfully generate a privately financed geothermal market in the United States?
- Near-term volatility in the Middle East creates a spike in the price of crude, while new LNG facilities allow for expanded nat gas exports, causing a major jump in fossil fuel prices.
- The Federal ITC is extended to 2020, allowing for five more years of market development.
- A new administration re-invest in energy-efficiency as a major goal in public works construction.
- A recovering American economy generates the solid tax base required for public works spending at the municipal level.
- Major financial institutions enter the geothermal heating and cooling market.
A positive view continued....

- The VRF industry loses ground in the US market.
- The success of IGSHPA 2.0 generates renewed interest in the market and an exponentially growing membership base.
- Advances in GHP technology create new product offerings.
- The uptick in the market generates positive consolidation and utility-scale projects.
- The Federal government codifies the definition of a geothermal heat pump system as renewable.
- Major electric utilities throughout the US embrace the geothermal heating and cooling industry.
Geothermal 2025: A different look

- Let’s assume the tax credits expire in 2016
- Technological advancements in the oil and gas sector allow for more efficient extraction = a relatively stable price for nat gas and crude. Malthusians have been erroneously predicting a collapse since the 1970’s.
- 0 % interest rates stoke the flames of a second major housing bubble which finally implodes in 2016 or 2017 – leading to yet another slow down in K-12 public infrastructure spending.
- LEED Who? The once popular cleantech revolution continues to face headwinds and a general lack of interest from the public.
- Many of the current Presidential candidates are against military spending thus we continue to see a lack of modernization spending in military bases.
- The US public continues to push for an isolationist foreign policy, equating to relatively little military spending.
- A dysfunctional Congress lacks the ability to pass major spending bills, again leaving the public construction market in a state of malaise.
- Membership in IGSHPA continues to decline and eventually the organization dissolves. (Geo Apocalypse)
- The industry survivors essentially work independently of one another in various regions throughout the US.
## Where are we today?

### Thousands of pounds of HDPE pipe

<table>
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<tr>
<th>Geothermal</th>
<th>Jul-15</th>
<th>Jul-14</th>
<th>% change</th>
<th>YTD 2015</th>
<th>YTD 2014</th>
<th>YOY Change</th>
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<tbody>
<tr>
<td></td>
<td>1247</td>
<td>1540</td>
<td>-19%</td>
<td>6729</td>
<td>9150</td>
<td>-26.50%</td>
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### Millions of pounds of HDPE shipped

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<td></td>
<td>28</td>
<td>21</td>
<td>15</td>
<td>30</td>
<td>22</td>
<td>16</td>
<td>-27%</td>
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</tbody>
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* Q1 2015 pipe shipments were down 44.8%
The end of an ARRA...
So what do we do? SWOT Analysis

**Strengths:**
- The only truly domestic renewable base-load technology that must be installed locally and works everywhere.
- Tight knit group (family reunion), basic agreement on how to design and install systems.
- Not reliant on Tax Credits or subsidies.
- Predictable outcomes and very reliable systems, thousands of success stories around the US and the world.
- The residential market has really grown throughout the US.
- The size of the industry enable us to be nimble, if we choose to be...
Weaknesses:
- Confusing message to the market writ large, with an overly technical focus. (SOLAR)
- Unforeseen operational challenges via varying geologic conditions.
- The immense cost of feasibility studies (TC test/Test Wells).
- General apathy of the American public towards energy-efficiency standards, combined with a lack of legislative and regulatory assistance. Even the States that have adopted aggressive standards seem to immediately back away from those goals.
- No core belief in climate politics.
- Industry “in-fighting” hurting the broader message to the market.
SWOT Analysis Continued: Opportunities

Opportunities:
- Privately Financed projects/ Cap and Trade / Energy-Efficiency regulation.
- Exponential growth in the market and general membership.
- General lack of awareness provides an opportunity for re-branding.
- Peer to peer marketing via OSU.
- Broad regional and international membership provides conduits into every market and potential political influence.
- Technological advancements.
- Resource pressure in the US and beyond (energy and water).
- Hybridization and integration with other renewable technologies.
- Barriers to entry in the drilling side of the business.
SWOT Analysis Continued: Threats

**Threats:**

- Sluggish US economy and weak demand in China = stable fossil fuel markets.
- Disruptive technology: Fuel Cells etc..., the possibility of being leap frogged.
- More efficient traditional HVAC equipment and lower prices.
- Declining IGSHPA membership and a lack of the “next generation”.
- Expiring ITC and an unfavorable regulatory environment.
- Housing Bubble 2.0 further erodes municipal budgets.
A Path Forward: Clear Goals

**Marketing:** We need to focus on one major “landmark” project that will generate genuine press and a renewed interest in the technology at the Federal level.

**Whale Hunting:** Leveraging peer to peer relationships at the college and university level to drive more BSU type projects.

**Branding:** We need one name for the technology that encompasses what we do.
Quantification: We need a mechanism to record and report our projects and successes. The industry is small enough that this shouldn’t be a major hurdle. Additionally, we need to focus on M/V in existing applications. Even if we get “grenade” close with our estimates, these number will be invaluable.

21st century Online Presence: #geo We have to work together to create a viral online presence. Information moves quickly and we are simply not part of the debate right now.

Decentralization: There needs to be a more inclusive model to encourage industry participation. Strong organizations have diverse membership profiles and integrate new ideas. We should use the IGSHPA conference to attack new markets, it should be a launching pad for growth.
Disruptive Technologies

- Tesla and UBER
- Solar
- Where do we fit in to this picture?
- What are we doing to reach the next generation of equipment?
- Where are the new drilling technologies that can dramatically reduce the cost of installation?
- How do we reduce the cost of feasibility studies?
- The solar market provides the best example of a “cottage” industry evolving into a financially viable international technology that is universally accepted and financed by major institutions.

- Loop Leases
- “Geothermal Funds”
- ESCO’s and ESPC markets
- Electric Utilities
What do you think?