

Pre-Commercial Scale-Up of a Gas-Fired Absorption Heat Pump

Stone Mountain Technologies Inc.

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Stone Mountain Technologies, Inc



- Michael Garrabrant, PI
 - Absorption Heat Pump Innovation and R&D
 - Gas Appliance Design & Volume Manufacturing Expertise

OEM Commercialization Partner

- Leading Global HVAC Manufacturer, Product Engineering, Volume Manufacturing, Marketing and Sales Distribution

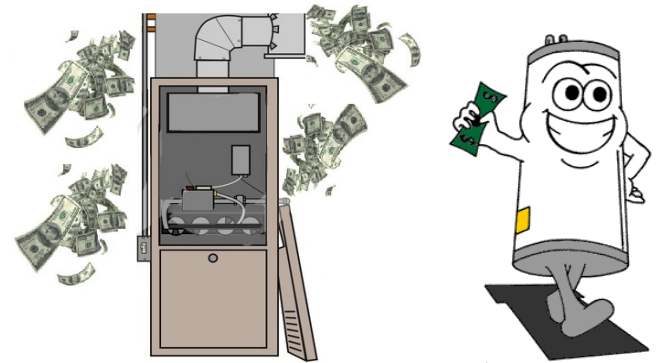
Gas Technology Institute

- Paul Glanville, R&D Manager
 - Gas Appliance R&D, Innovation, Natural Gas Industry Representation
 - HVAC-Water Heating Field Test Expertise



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Ultra-High Efficiency Gas Heating Appliance *Breaks 100% Efficiency Barrier*



✓ Saves Money

Homeowners in Cool-Cold Climates spend **\$1,500-\$2,500 per year** to heat their home and water. GAHPs reduce the cost of space and water heating by **30-50%**.

✓ Maintains High Level of Comfort Gas Customers Demand

Everyone wants a Warm, Comfortable Home and Long Hot Showers

✓ Reduces Carbon Footprint by Lowering CO₂ Emissions



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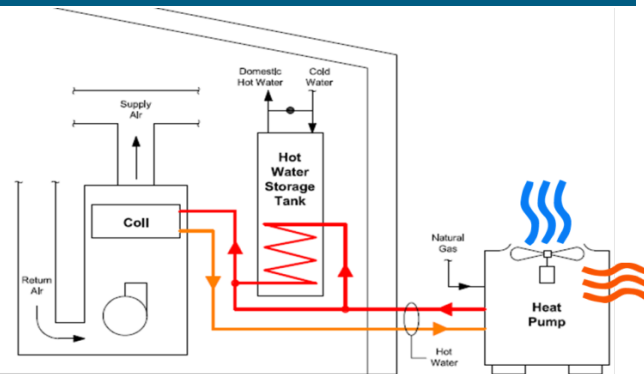
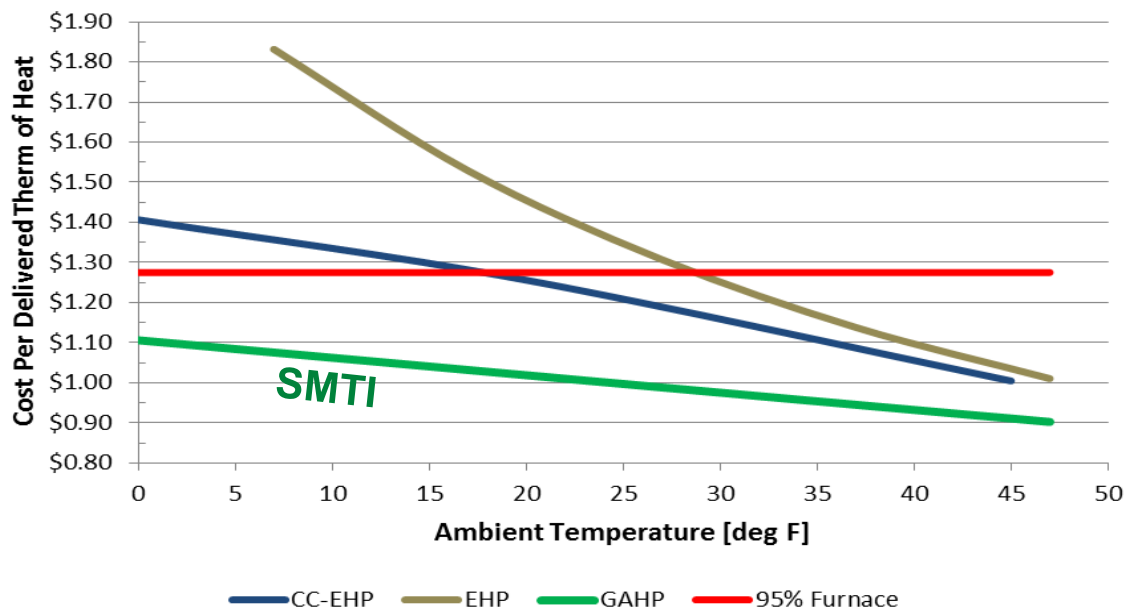
Reduce the Operating Cost, Energy Usage and CO₂ Emissions of Heating by 30-50% by Operating With an **AFUE of 140%**

While Providing Improved Comfort with **4:1 modulation**

Outperform Cold Climate-Electric HP Technologies

Cost per Delivered Therm: Space Heating

Natural Gas: \$1.20/therm Electric: \$0.12/kW-hr



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- ✓ 30-50% reduction in space and water heating energy use when compared to conventional technologies (furnace, boilers, water heaters)
- ✓ Work well in cold climates – still provide warm temperatures gas customers demand
- ✓ Out-perform electric heat pumps (including CC-EHPs) for space heating in cool-cold climates (both operating cost & emissions)
- ✓ Simple thermodynamic cycle, scalable heat exchangers that are compatible with automated manufacturing methods (low cost)
- ✓ Simple payback of 2-5 years depending on technology being replaced, climate zone

Mature SMTI's GAHP from TRL-7 to pre-production ready

- Design for manufacturing of all components/systems
- Demonstrate compliance with relevant ANSI standards
- Manufacturing and assembly process specifications/costs
- Assessment of component and system reliability
- Field demonstration with customer/key stakeholder feedback
- Techno-economic analysis
- Market Study

Thank You

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