

Opportunity!

In 2016

Focus on the Future

- EcoThermics offers best-in-class transcritical CO₂ compressor technology
- Competitive benefits include:
 - Size
 - Capacity
 - Cost

EcoThermics is now ready to join forces with one or two major strategic partners to enable rapid deployment of a wide range of compressor models:

- All applications
- Global markets

1. New *clean energy* technology
2. Globally recognized brand
3. Technical resources
4. Two R&D labs
5. Applicable patent filings
6. Registered trademarks
7. R&D history with both compressors and systems
8. Technology which applies to both commercial refrigeration and heat pump applications
9. Existing partners – including Mennie Machine which has readily available production capacity
10. Compelling desire to forge strategic partnerships to enable win-win opportunities for everyone.

Optimum outcome for

- Partners
- EcoThermics
- Transcritical CO₂ technology

1. Globally recognized brand
2. Existing distribution channels
3. Understanding global forces and trends
4. Vision regarding benefits of natural refrigerants
5. Interest in CO₂ compressors or systems or both
6. Interest in expanding product lines and revenue sources
7. Technical, business development, marketing and sales resources
8. Desire to implement opportunistic change quickly and effectively
9. Sense of urgency to realize competitive advantages sooner rather than later
10. Compelling desire to leverage existing talent & processes to achieve strategic goals.

Optimum outcome for

- Partners
- EcoThermics
- Transcritical CO₂ technology

Product Prototype History: 2013



First public product announcement:

- EcoThermics AT74 (S1 family)
- In Multistack HPWH product
- At 2013 AHR Expo, Dallas, TX



Eco₂Boost[®] Heat Pump (Next Gen in '16?)

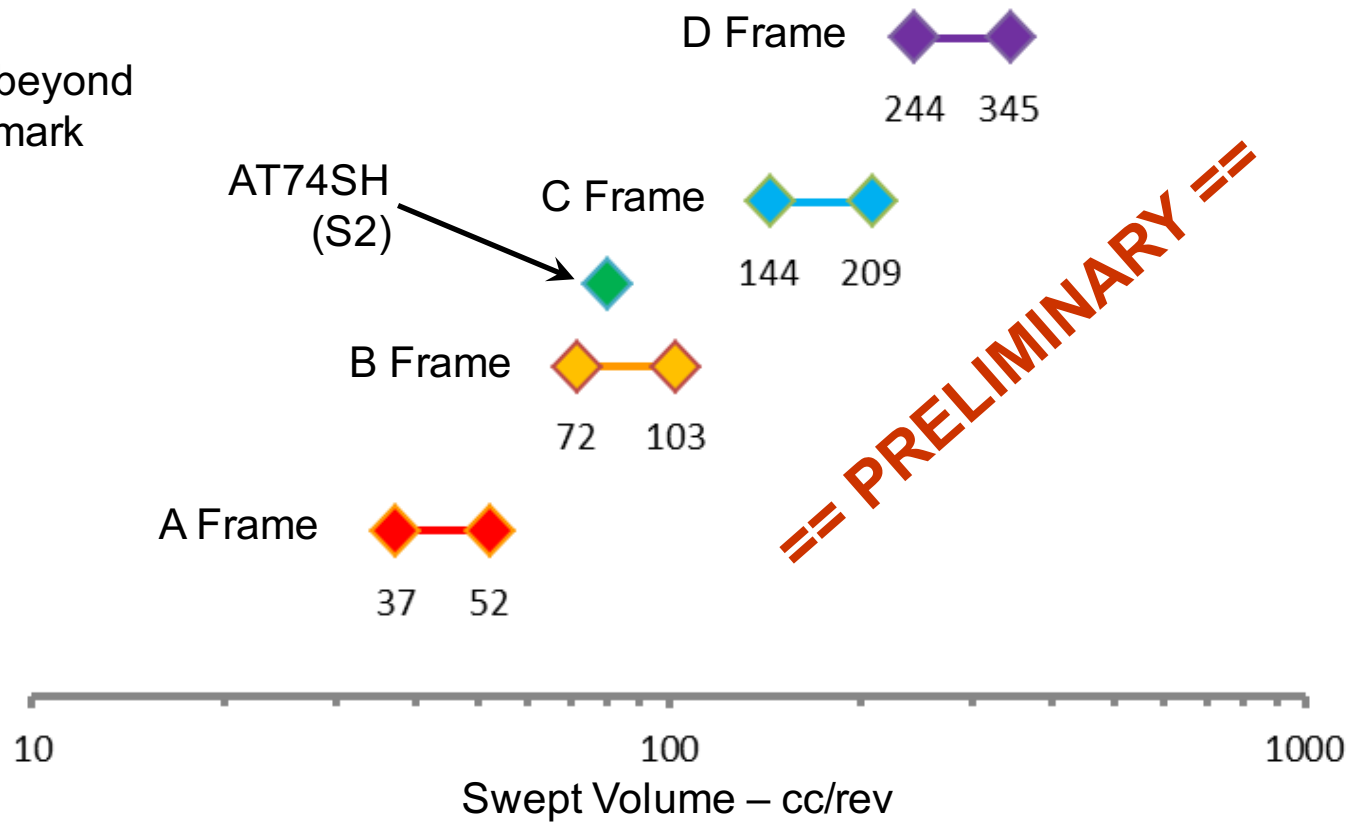


L = 28 in. D = 19 in. H = 30 in.

Future S3 Compressor Family Scenario (More compact with reduced production costs)



- Eight models in four frame sizes
- Suited for industrial heating, cooling, and refrigeration.
- D Frame capacity beyond competitive benchmark



Integration of proven features (from other mechanisms)

- Axial pistons with shoes (high pressure hydraulic pumps)
- Piston rings to seal gas (reciprocating compressors)
- Motor cooled by suction gas (scroll compressors)
- Oil to critical surfaces pumped by spinning shaft (scroll compressors)
- Vertical orientation with small footprint (scroll compressors)

Innovations to improve value

- Rolling interface between piston retainer sleeve and plate
- Liquid separation from suction flow
- Robust suction valves that function at 3500 rpm and tolerate some slugging
- Dynamic balance
- Omni-ring discharge valve
- Gas circulation to cool lower windings and sump
- Operation above 3500 rpm (to be developed)
 - Low mass pistons
 - Solid retainer sleeve
 - Thrust bearing

Partners & Supporters



Alliance Automation – R&D Lab (Van Wert, OH)



Caterpillar Inc. – Technical support resources



Country Maid – System prototype test/evaluation site



INTEGRIS Group – Engineering resources



Mennie Machine – EcoThermics R&D Lab; Compressor manufacturing, testing & shipping



Multistack – Compressor test/evaluation (S1)



Regal Beloit – Motor prototypes & technical support



Shecco – Global marketing



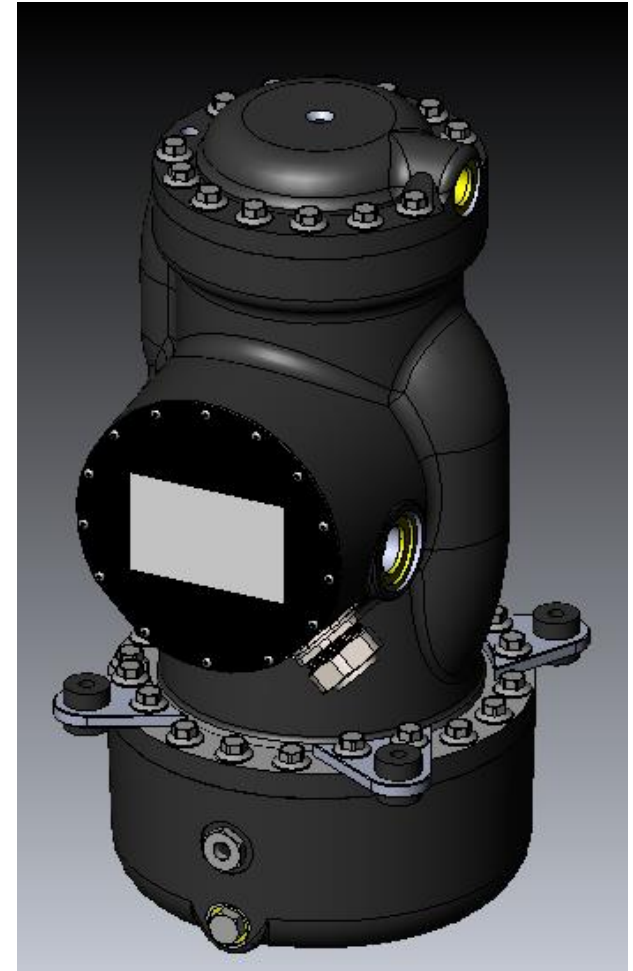
WaterFurnace – Early prototype funding & testing

Why CO₂?

- Growing global interest: refrigeration systems
- Increasing demand for natural refrigerants
- Increasing concerns about global warming
- Opportunities to reduce operational costs
- Huge opportunity: combined heating/cooling
- For additional data: www.R744.com

Why EcoThermics Compressors?

- Vertical orientation – small footprint
- Connection access
- Dynamic balance
- Low vibration
- High speed (rated at 3500 rpm)
- Single-axis construction
- High part commonality --
 between models in a common frame
- Fewer parts (vs. reciprocating compressors)
- Smaller size (vs. reciprocating compressors)
- Reduced weight (vs. recips)
- Lower production costs (for a given volume)
- Competitive pricing for OEM's



- **Current state:** EcoThermics has been successful in developing a robust, unique, patented high-pressure compressor architecture for transcritical CO₂ applications.
- **Future direction:** EcoThermics is now ready to join forces with one (or more) major strategic partner(s) to:
 - Significantly shorten time to market and to scale
 - Utilize existing production facility with available capacity
 - Take UL-Certified compressors into production in 2016
 - Deliver system solutions to meet customer needs
 - Leverage existing known brands and distribution channels
 - Utilize advanced engineering and lab resources
 - Leverage proven business development, sales & marketing resources
 - Ensure world-class customer support services.

- EcoThermics has been designing, building, testing and filing patents on transcritical CO₂ **compressors** (from 5 hp to 40 hp) and **heat pump systems** for nearly ten years.
- EcoThermics compressors offer these primary competitive advantages:
 - Lower production costs for any defined compressor size/capacity
 - Expected significant upward capacity scalability with minimal increases in cost
 - Significant range of variable operational capacity for any specific unit or application
 - Opportunities for system builders (OEM's) to compete more effectively in their markets.
- We have had hundreds of requests from distributors, dealers and end users for HPWH systems, especially under one or more of these conditions:
 - No natural gas currently available
 - Available fossil fuel costs are simply too expensive
 - Need simultaneous heating & cooling of air and/or water
 - High temp lift applications (e.g., tap water up to 160° F and higher)
 - Interest in or requirement for a natural refrigerant (for environmental reasons).
- Our preference has been to focus primarily on compressors (i.e., not complete systems), but we have determined that we need major strategic partners now to:
 - Assist in developing the larger sizes for full market penetration
 - Assist with sales/distribution to help us rapidly ramp up volumes and reduce unit costs
 - Provide critical mass to optimize future production capacity and customer response/support
 - Help overcome resistance to change among many major industry segments.
- We now need **one or more partners** to more **quickly and effectively meet the needs of early-adopter customers** – today and in the future.

Optimum outcome for

- Partners
- EcoThermics
- Transcritical CO₂ technology

- **Let's talk!**
- **There is no cost or obligation if we simply sit down together and brainstorm!**
- **Thank You!**

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