



Innovative Fluid Mechanics Technologies

## CO<sub>2</sub> Heat Pump Technology

Higher efficiency with a natural refrigerant

EcoThermics has made breakthrough technological advances, solving industry recognized roadblocks to utilizing CO<sub>2</sub> as *the* preferred replacement for harmful HFC refrigerants, which are greenhouse gasses. A system using our ultra-efficient, super-compact compressor and innovative energy recovery module will reduce heating and cooling costs by as much as 50%.

Amid soaring energy costs and increasing environmental concerns, the HVACR industry will now have a smarter way to provide green, safe, and more cost efficient heating and cooling.

***“EcoThermics has developed potentially game-changing technology.”***

***Glen Barton, Retired CEO, Caterpillar Inc.***

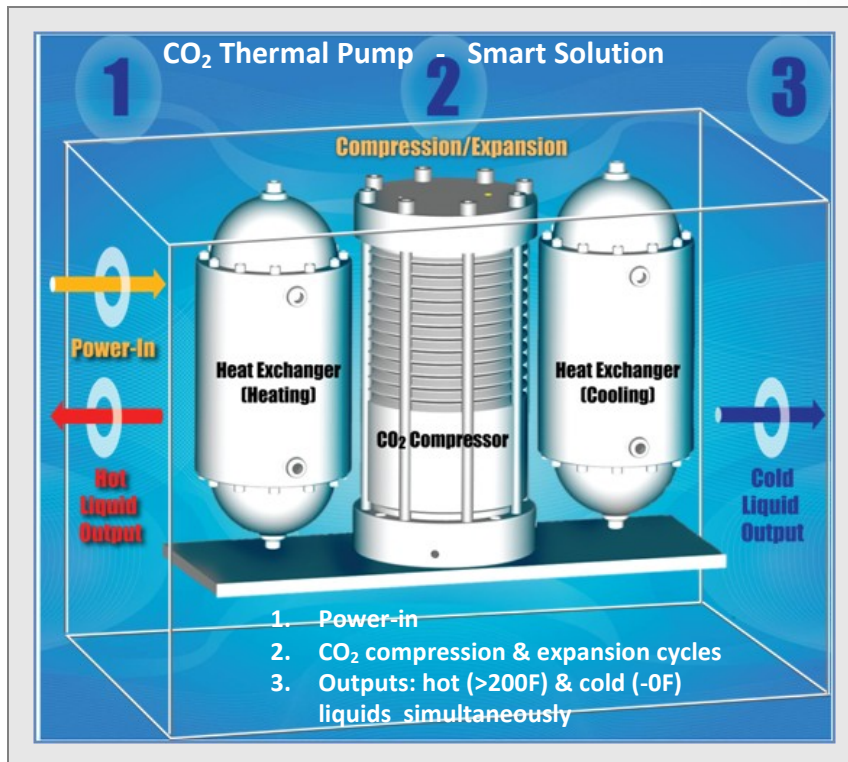
Based in Peoria, Illinois, EcoThermics Corporation develops and markets compressor technology utilizing a natural refrigerant for multiple product applications. EcoThermics has applied its core competency in both high-pressure fluid mechanics and thermodynamics to create a durable, high-performance prototype compressor, a key component that OEMs will use to build sustainable and economically responsible heating and cooling systems.



EcoThermics Technology - saving... Energy, Money, our Environment

# Unique Proprietary Design

The industry recognizes the benefits of using carbon dioxide to heat and cool air and water, yet challenging high pressures and the unique characteristics of transcritical CO<sub>2</sub> have been obstacles to its development and implementation. While there are other CO<sub>2</sub> compressors now available on the market for much smaller applications, such as vending machines and automobiles, EcoThermics has developed the first of its kind CO<sub>2</sub> compressor in the 3-7 ton size range in the world. This unique, patented technology is robust, compact, efficient and because of its design, will result in lower life service costs... and it's *green*.



**Super Compact - 30" x 30" x 30"**

## CO<sub>2</sub> Compressor Technology    Customer Benefits

- Low energy consumption - Save as much as 50% on heating and cooling costs
- CO<sub>2</sub> - natural refrigerant - Sustainable solution, no HFCs to monitor, report or dispose
- Variable capacity (3-7 ton) - Continuously meets changing system demands with high efficiency
- Superior design for durability - Lower life service costs (repair/warranty)
  - High efficiency - Higher performance for faster heating and cooling response time
- Low sound emission, compact, powerful - Reduced noise pollution and occupies less floor space
- Manufacturability—no exotic raw materials - Minimize costs through economies of scale & remanufacturability
- Hydronic (fluid) radiant heating & cooling - Distributes & conserves thermal energy; ability to maintain constant temperatures for maximum comfort
- AC or DC electric motor or hydraulic drive options - Diverse power inputs allow flexible applications and portability
- Innovative technology - Enables competitive advantage in a market hungry for new technology

# Broad Applications in a \$51B Market



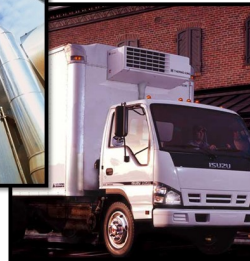
Residential



Commercial



Industrial



Mobile/Portable

Sixty percent of home utility costs come from heating and cooling air and water. In commercial or industrial buildings like hospitals, prisons or factories, that number can exceed eighty percent.

The market for CO<sub>2</sub> is growing and rapidly approaching a tipping point to replace HFCs in mass.

EcoThermics compressor technology is ideal for new or retrofit applications and our go-to-market strategy is simple - we will be the “intel” of the industry, with our components inside OEM customer products.

## Building a Sustainable Value Chain

### From component suppliers to OEM manufacturers

**Investors** - Angel investors, joint development partners and governmental agencies including the U.S. Army are supporting this innovative technology.

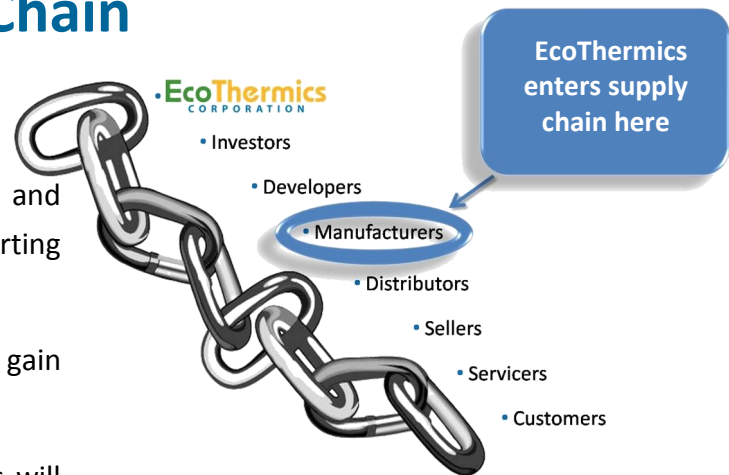
**Development Partners** - Early development partners will gain competitive advantage from being first to market.

**Manufacturers** - A small number of global manufacturers will realize greater market share and higher margins as a result of being exclusive sources of EcoThermics compressors.

**Distributors** - OEM manufacturers will incorporate EcoThermics technology into their product lines, leading to greater market share and higher margins. We will leverage existing sales and distribution channels to maximize speed to market and speed to scale.

**Sellers & Servicers** - Dealers will benefit from expanded market opportunities, ease of serviceability, and elimination of refrigerant reporting and training requirements.

**Customers** - End users will experience reduced energy and maintenance costs, greater system flexibility, increased comfort and a safe, natural refrigerant.



# World Class Management Team



## Merle Rocke, *Chairman & CEO*

- Diverse background: Manufacturing, Technology, Supply Chain & Consulting
- Founder & former GM, Caterpillar Logistics Services, Inc.
- Global start-up experience
- History of success - bringing innovative ideas to market



## Travis Horton PhD, *Chief Technology Officer*

- Purdue University faculty
- Recognized industry expert in transcritical CO<sub>2</sub> compression
- Small-scale combined heat and power (CHP) research
- Net-zero energy building research



## Rodney Hugelmann PhD, *Chief Scientist*

- Solid Rocket Engine Program, U.S. Air Force
- High Voltage Plasma Generators, Mars Program
- Turbo Pump & Feed Network - Atlas Missile Program
- Professor Emeritus, University of Illinois



## Thomas Lewicki, *CFO*

- Commercialized UI Mosaic browser (Microsoft Internet Explorer), first Internet software IPO (Spyglass)
- Commercialized first Internet shopping cart, \$25m strategic investment
- Incubation, spin-out & sale of Internet business from Zurich America Insurance



## Interested in learning more about how EcoThermics technology can benefit you?

If you want to learn more about EcoThermics technology, please contact us. We are especially interested in meeting with you to explore potential mutual benefits from future collaboration if you are:

1. A development partner
2. A component manufacturer (e.g., compressors, heat exchangers, HVACR motors, etc.)
3. An OEM system manufacturer/distributor



Contact us or visit our website to learn more:

Merle Rocke  
Chairman & CEO  
309.303.0681  
mrocke@ecothermics.com

Thomas Lewicki  
Chief Financial Officer  
217.621.2402  
tlewicki@ecothermics.com

Tammie Leichtenberg  
Director, Corporate Services  
309.495.7320  
tleich@ecothermics.com

[www.ecothermics.com](http://www.ecothermics.com)

Peoria NEXT Innovation Center  
801 W. Main Street  
Peoria, IL 61606