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# Reducing energy use in natural refrigerant systems with the Hybrid TrilliumSeries™ Condenser

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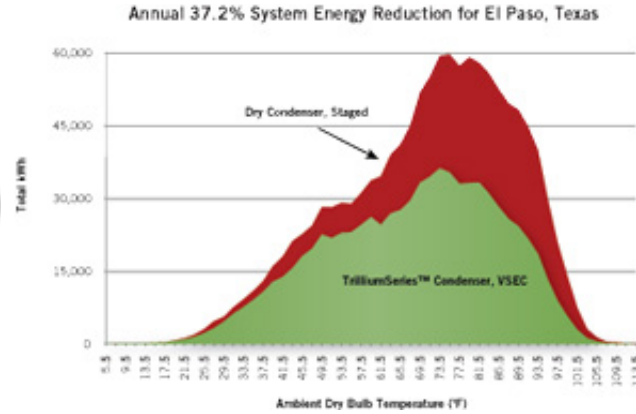
Business Manager, Commercial Refrigeration

June 17, 2016

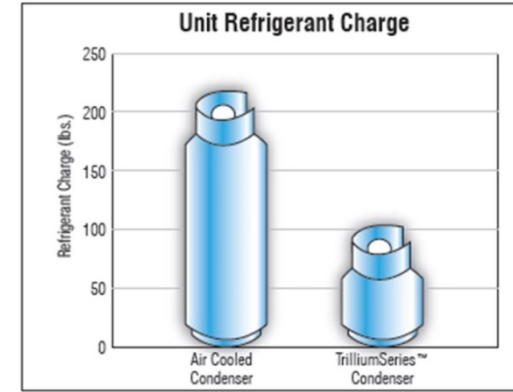




# Benefits

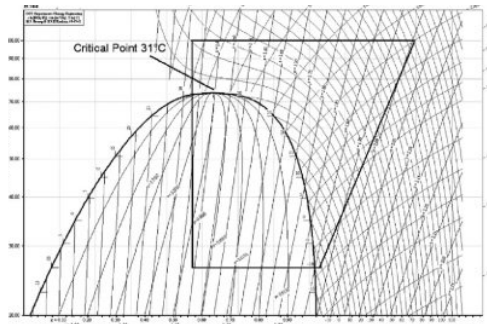


Energy Efficient



Charge Reduction

Low Charge

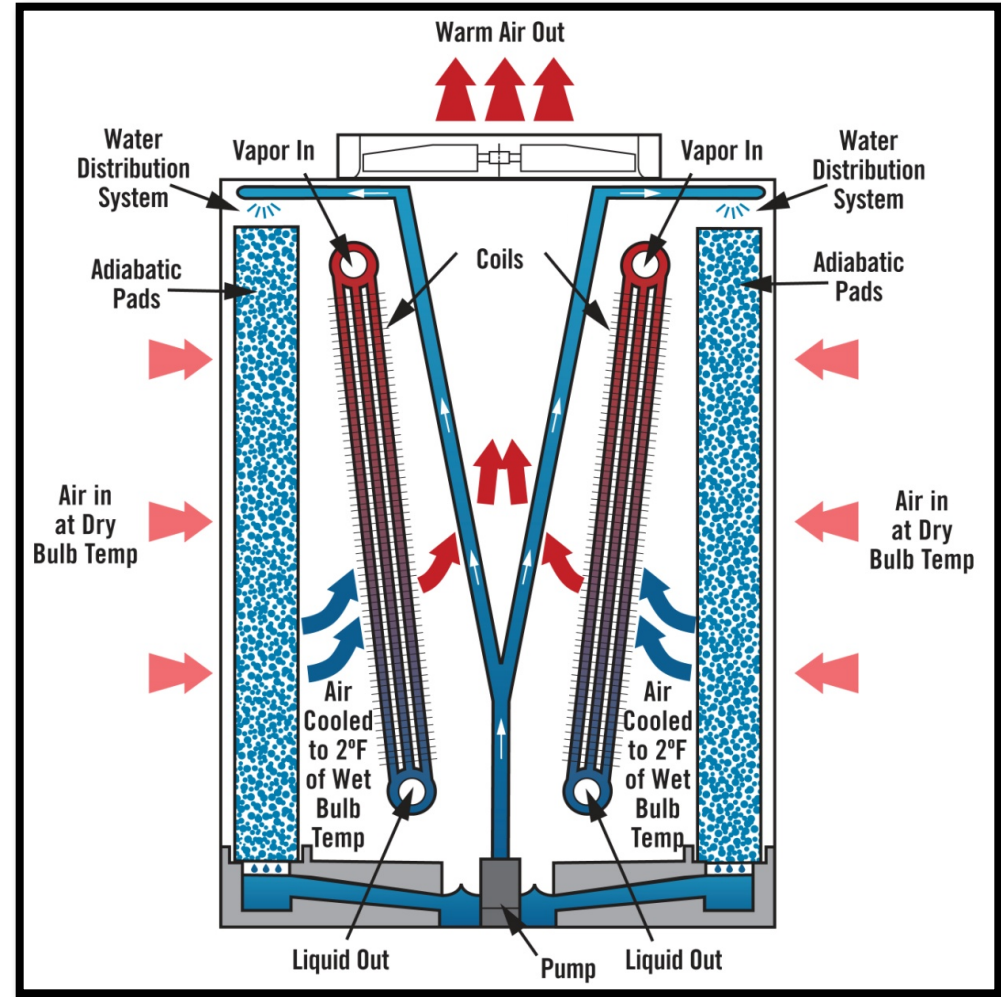
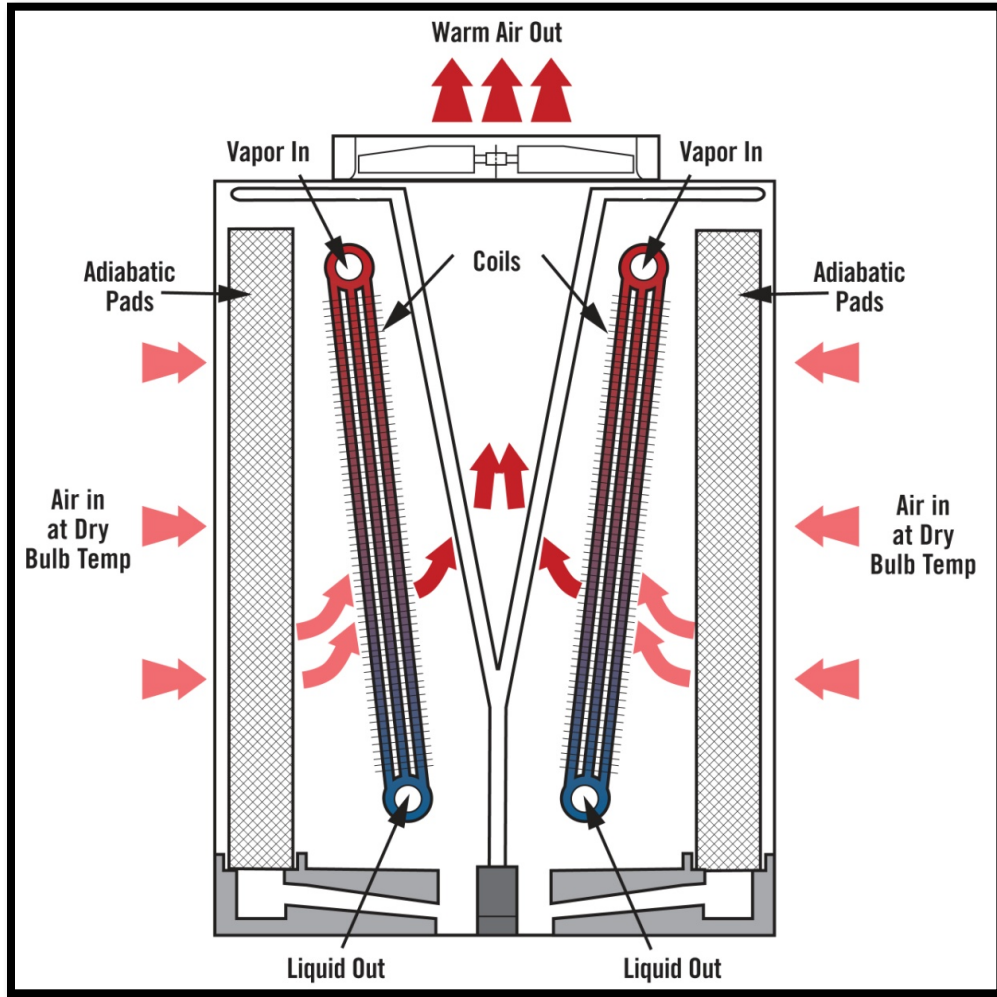


Transcritical CO<sub>2</sub>

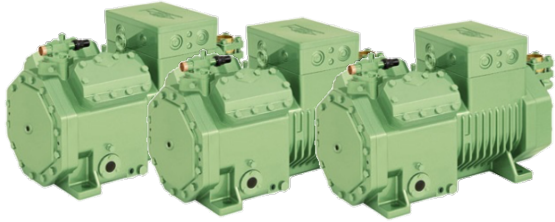


Reliable Operation

# How it works



# Energy Reduction



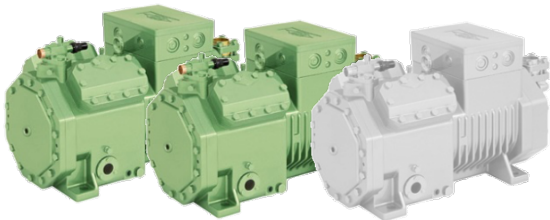
Compressor Power:  
Reduced Condensing/Subcooled temps

+



Fan Power:  
High efficiency ECM motors with variable speed

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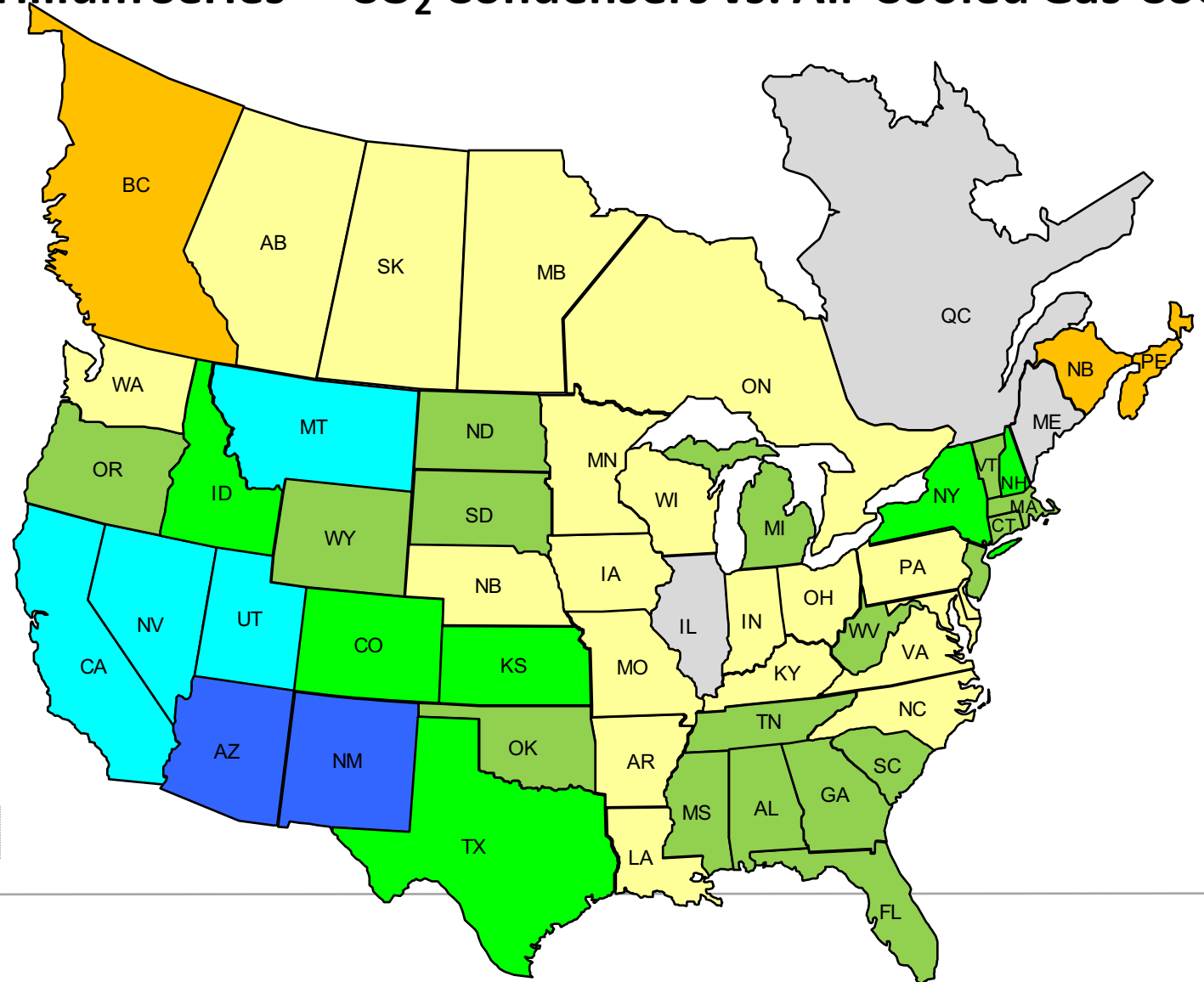


Reduced peak kW and annual kWh  
Reduced parasitic losses from smaller switchgear  
**\* Recirculated water to minimize water usage when saving energy**

# Good Economic Choice Across the Nation

## Payback Map of Trillium Series™ CO<sub>2</sub> Condensers vs. Air Cooled Gas Coolers

- < 1 Yr payback
- 1-1.5 Yr payback
- 1.5-2 Yr payback
- 2-2.5 Yr payback
- 2.5-3 Yr payback
- 3-3.5 Yr payback
- 3.5-4 Yr payback
- > 4 Yr payback



State Results shown are Averages.  
Individual results vary based on:

- Load Profile
- Climate
- Electric Rates





# Installation Versatility with Natural Refrigerants

R717  
Ice Rink



Transcritical CO<sub>2</sub>  
Supermarkets



R717  
Winery

R717  
Mixed A/C – Refrig



Cascade CO<sub>2</sub>  
Supermarket



# Success Stories

City	Refrigerant	Evap Load (MBH)	Peak kW		ROI (yrs)
			Air Cooled	Hybrid	
Palm Springs, CA	CO <sub>2</sub>	300	151	55	0.7
Westchester, NY	CO <sub>2</sub>	1300	356	196	1.4
Newport, RI	CO <sub>2</sub>	1000	328	172	1.7
Atlanta, GA	CO <sub>2</sub>	600	154	98	2.2
Birmingham, AL	CO <sub>2</sub>	450	118	69	2.2
San Jose, CA	NH <sub>3</sub>	1500	142	95	1.5
Minneapolis, MN	NH <sub>3</sub>	1300	116	81	2.6
Harrisburg, PA	NH <sub>3</sub>	6000	529	386	2.9



Energy Savings  
in all climates

