



**ATMO**  
sphere

# DIVERSE APPLICATIONS FOR LOW CHARGE AMMONIA

Caleb Nelson, P.E.

VP-Business Development

Azane, Inc.

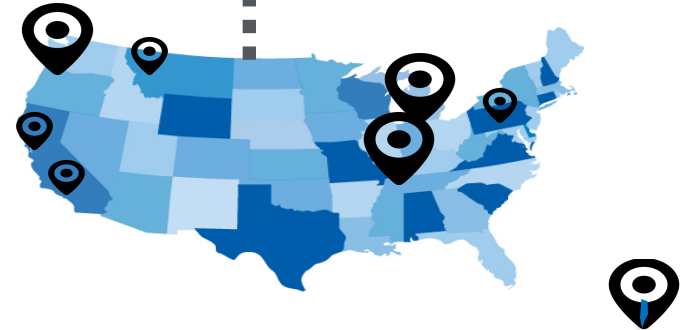
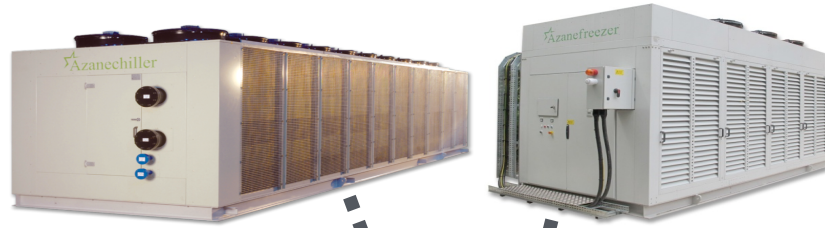
w: [azane-inc.com](http://azane-inc.com)

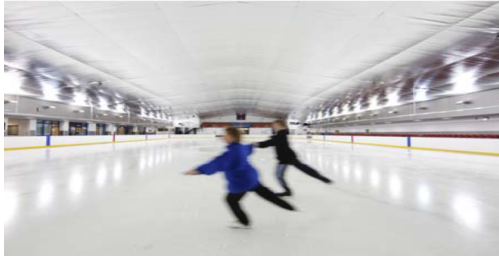
w: [star-ref.co.uk](http://star-ref.co.uk)

t: 406-546-7345

The Azane logo, featuring a green star with a lightning bolt shape on the left side, followed by the word "Azane" in a green, serif font.

**Azane**





- Ice Rinks
- Refrigerated Storage
- Frozen Storage

- Breweries/Wineries
- Industrial Process
- Supermarkets & HVAC



# EXAMPLES:

## Air-conditioning

Portland, OR.  
Bakery  
900 TR



## Process

Humboldt, TN.  
Canning Facility  
450 TR

## Air-conditioning

Napoleon, OH.  
Food Manufacturer  
300 TR



## Air-conditioning & Process

San Juan, PR.  
Plastics Manufacturing  
300 TR



## Supermarkets

NH3/CO2





## Portland, OR.

- Bakery
- 900 TR Air-Conditioning
- 3) 300 TR packages
- 450 lb NH<sub>3</sub> per package
- 1.5 lb/TR
- Populated area:
  - residential housing (250')
  - public theater (250')
  - restaurants (900')
  - daycare (1000')

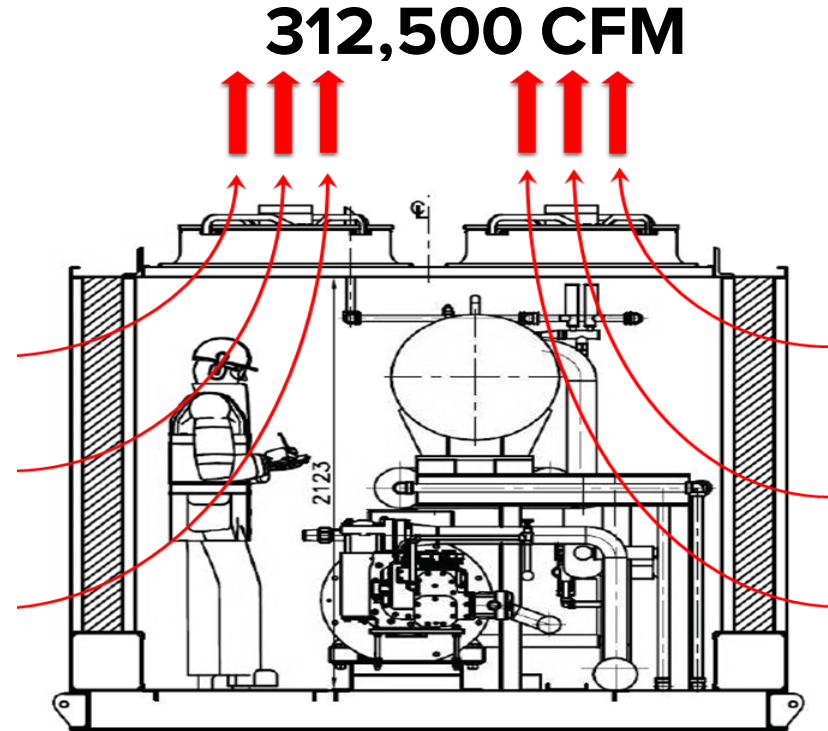


### User Acceptance

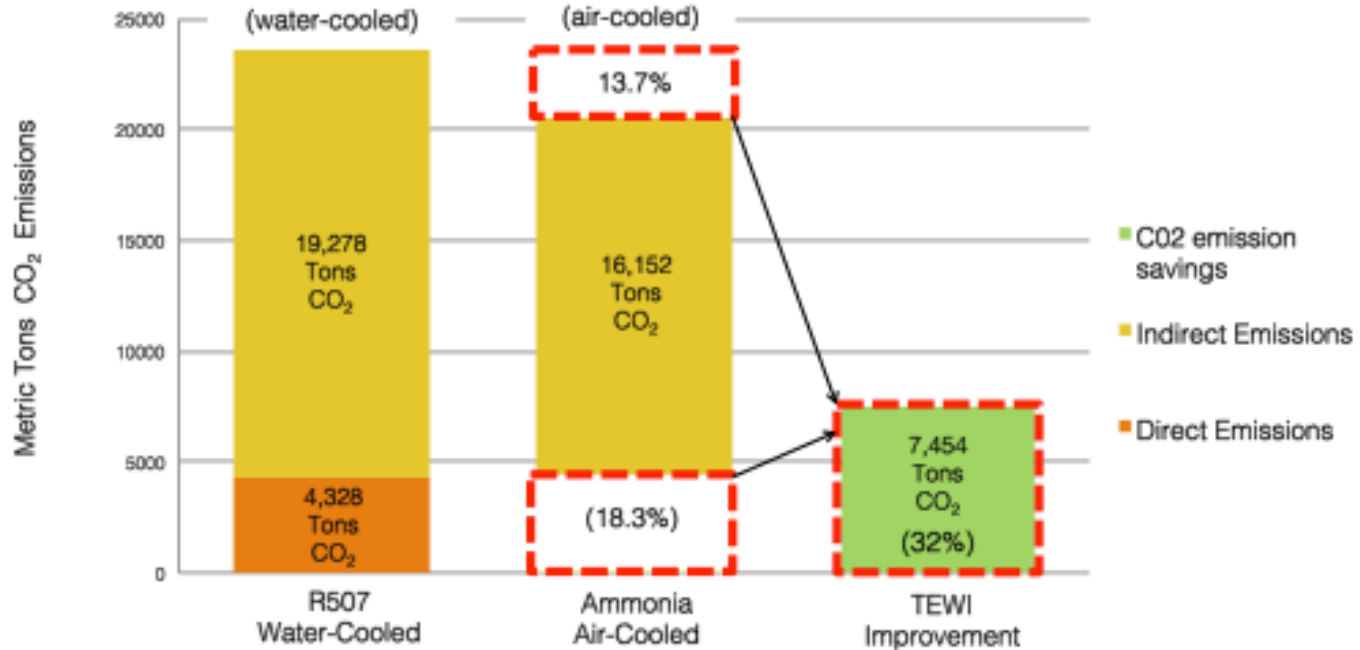
- Ammonia < 500 #
- 4 levels of SRV release prevention
- 3 sources of leak detection
- Fresh air dilution
- 9000+ ACH (code is 30)
- Self-contained

### Jurisdictional Acceptance

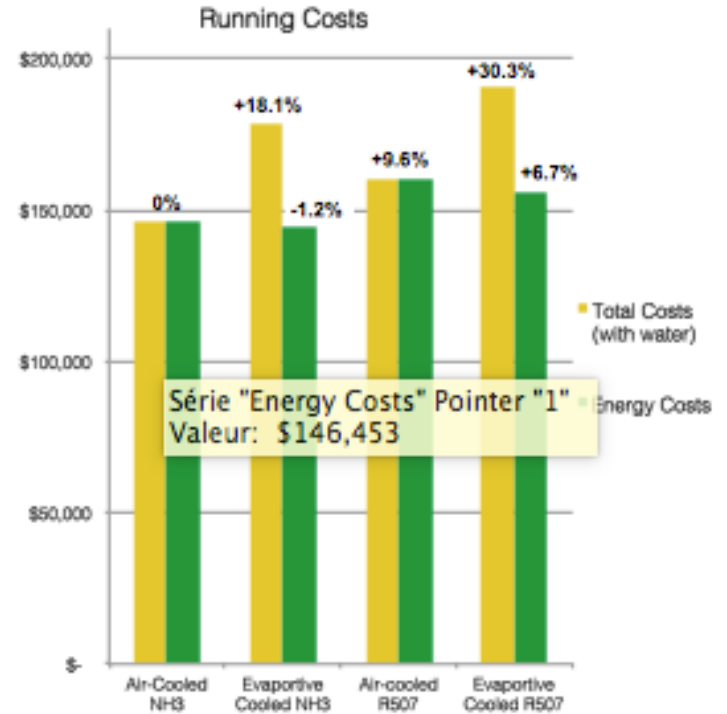
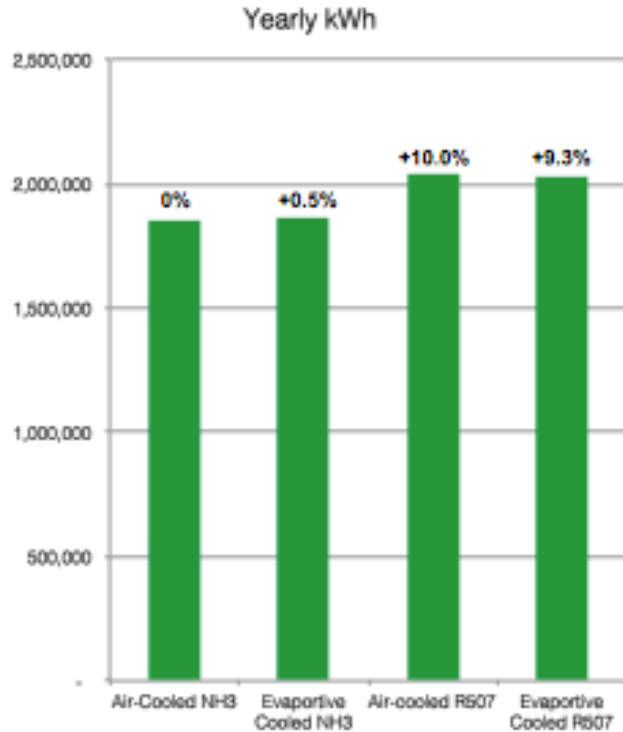
- Energy Consumption
- Water Consumption
- Overall Environmental Impact



TEWI (Total Equivalent Warming Impact)  
Water-cooled R507 vs. Air-cooled Ammonia



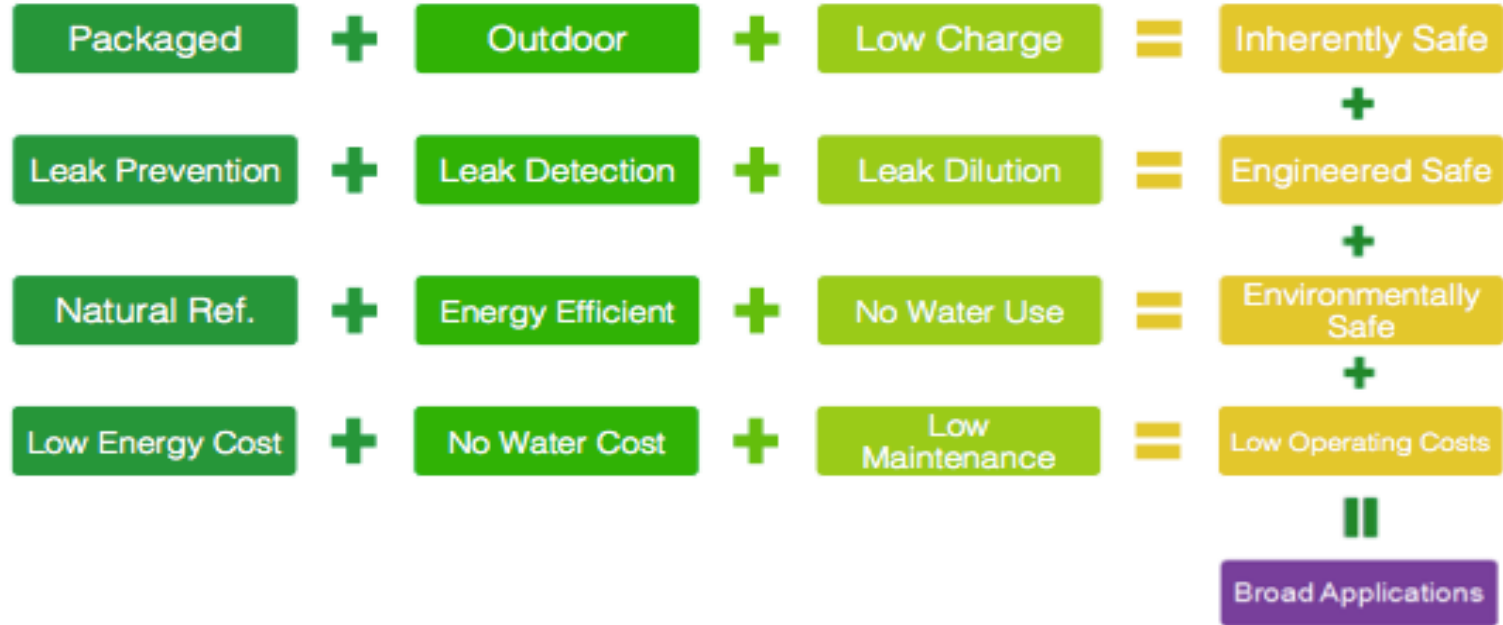
## IIAR TP research: Portland, Oregon\*



\*Source: Scott, D. 2016 "Comparing Evaporative and Air-Cooled Condensing in Ammonia and HFC-507 Refrigeration Systems" Technical Paper #2, IIAR, 2016



## Conclusions:





**ATMO**  
sphere

Azane

Thank you very much!

