Applying Low Charge Ammonia Systems To An *Operating* Dairy

Kurt Liebendorfer
Vice President – Evapcold
evapco for LIFE
Taneytown, Maryland

The facility is an operating process plant that has an outdated existing ammonia system & the plant is undergoing a significant expansion. Safe operation & minimizing impact to production is a key priority

- The Memphis, TN plant produces a variety of beverages, including a complete line of milks and juices.

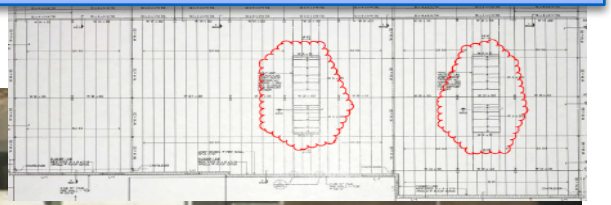
- Expansion & remodeling project includes expanded production, equipment upgrades, new packaging line and an addition to its refrigerated warehouse.

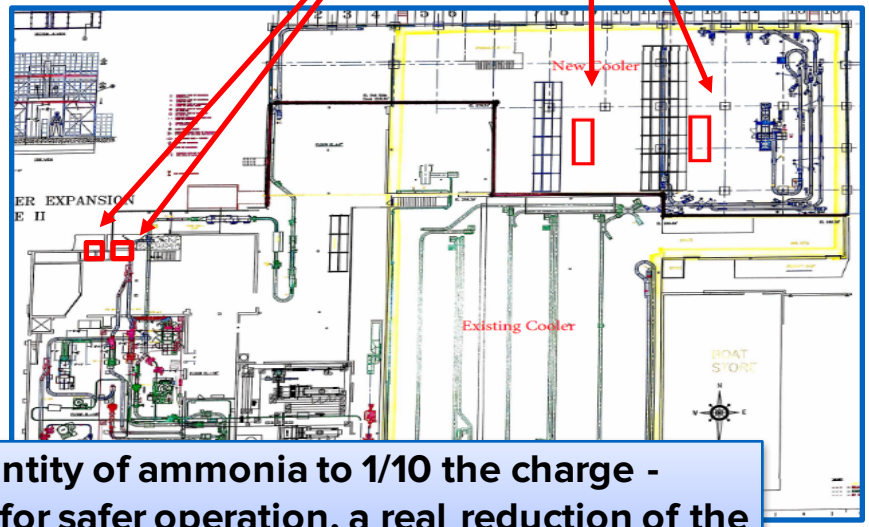
EVAPCOLD Model	Total TR	Total lbs. NH_3
35°F Coolers: (2) LCR-090P-M25-2H-W	200	764
Process: (2) LCR-130C-M20-2831-N-W	260	260
	460	**964**
		(2.1 lb/TR)

Penthouse Units
Chillers

Existing NH3 system = 9,000 lbs.

Expansion would put them over 10,000 lb. TQ





Significantly reducing the quantity of ammonia to 1/10 the charge - including the expansion. Allowing for safer operation, a real reduction of the regulatory burden and a lower cost of ownership for the owner

ATMO sphere AMERICA

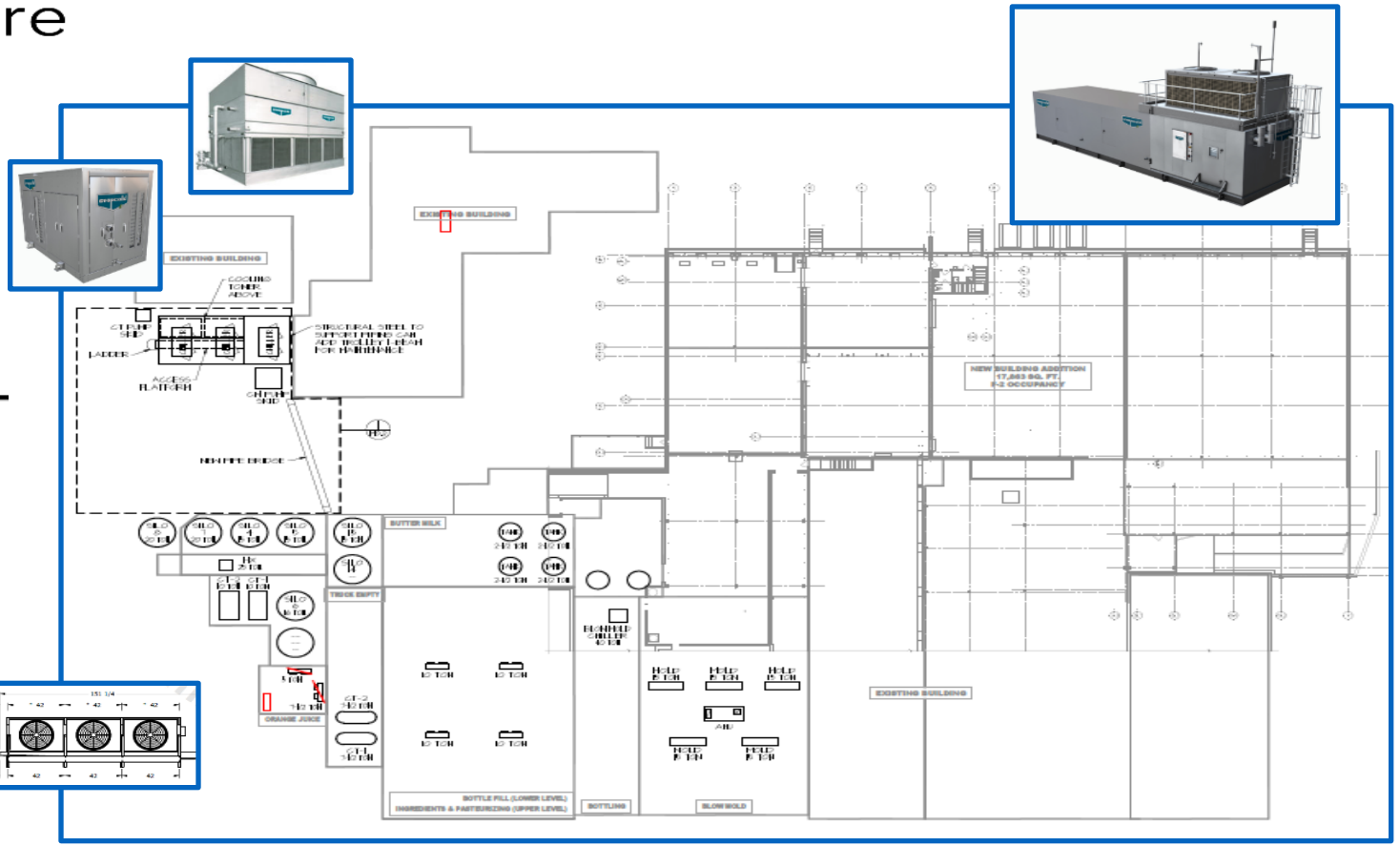
Process Loads

Ingredient Tanks

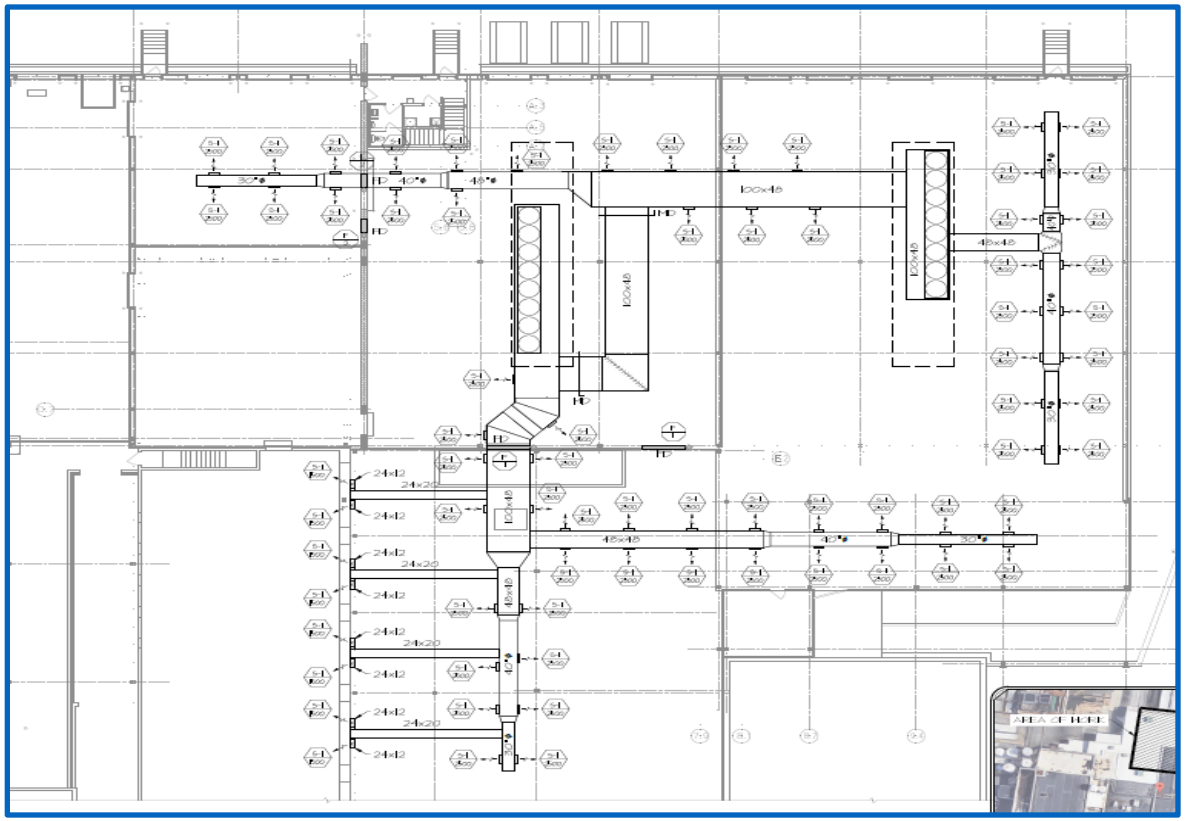
Pasteurizers

Room Name

Shop Evaporator
CU#0 OJ Room
CU#1 Bottling Room
CU#2 Bottling Room
CU#3 Bottling Room
CU#1 Blow Mold Room
Blow Mold Penthouse
CU#1 Ingredient Room



- Cooling to new warehouse & to exiting plant via ducted supply air to separate rooms.
- Eliminates the need to mount the rooftop units on the existing roof structure.
- Eliminates running ammonia piping thru new & existing plant.



Plug & Play:

- Modular sections make it fast & easy to install in ONE DAY !
- Refrigeration work is substantially complete @ same time as steel erection milestone

Easier Site Coordination & Less Impact On Plant Operations:

- Refrigeration field work is significantly reduced inside the existing operating plant & the plant jobsite
- Less disruptive to plant production
- Faster project installation
- Faster startup
- Safer system operation
- Operating Dock to the left will be temporally shut down while next new steel bay is erected and 2nd Evapcold unit is quickly installed

EVAPCO GUARANTEED PERFORMANCE

Penthouse Units

Chillers

MODEL NUMBER	LCR-090P-M25-2H-A	
Unit Qty.	2	
Unit Tag	Milk Cooler	
LCR DESIGN CONDITIONS		
Total Cooling Capacity, Tons	100	
Room Temp DB, °F	34	
Outdoor Temp DB, °F	95	
Outdoor Temp WB, °F	78	
Airflow, CFM	91,484	
Comp. Sat. Suct. Temp	20	
Comp. Sat. Disch. Temp.	112	106
Compressor Rpm	3829.57	3708.58
Shaft BHP, HP	160.20	143.79
BHP/Ton at Design Conditions	1.6	1.4
Capacity Control Type	Modulated w/ VFD	

MODEL NUMBER	LCR-130C-M20-2634-N-W
CHILLER DESIGN CONDITIONS	
Total Cooling Capacity, Tons	130
Outdoor Temp DB, °F Outdoor	95
Temp WB, °F	78
Chilled Fluid	
Fluid Type	Propylene Glycol
Fluid Solution Percent, %	35
Return Chilled Fluid Temp, °F	34
Supply Chilled Fluid Temp, °F	26
Chilled Fluid Flow Rate, Gpm	421.6
Comp. Sat. Suct. Temp. Comp.	20
Sat. Disch. Temp. Compressor	98
Rpm	3639
Shaft BHP, HP	151.6
BHP/Ton at Design Conditions	1.17

Factory Packaged Low Charge Ammonia
- Distributed Refrigeration Systems -

1. *Significantly Less Ammonia Charge*
2. *Significantly Lower Regulatory Burden*
3. *Lower Energy*
4. *Eliminate Central Machine Room*
5. *Faster Installation & Startup*
6. *Competitive Cost*
7. *Reduce Tax Burden*
8. *Lower Life Cycle Costs*
9. *Latest Technology*
10. *Comprehensive Documentation*

ATMO AMERICA sphere

Thank you very much!