Gordon Brothers Industries

Presented By:

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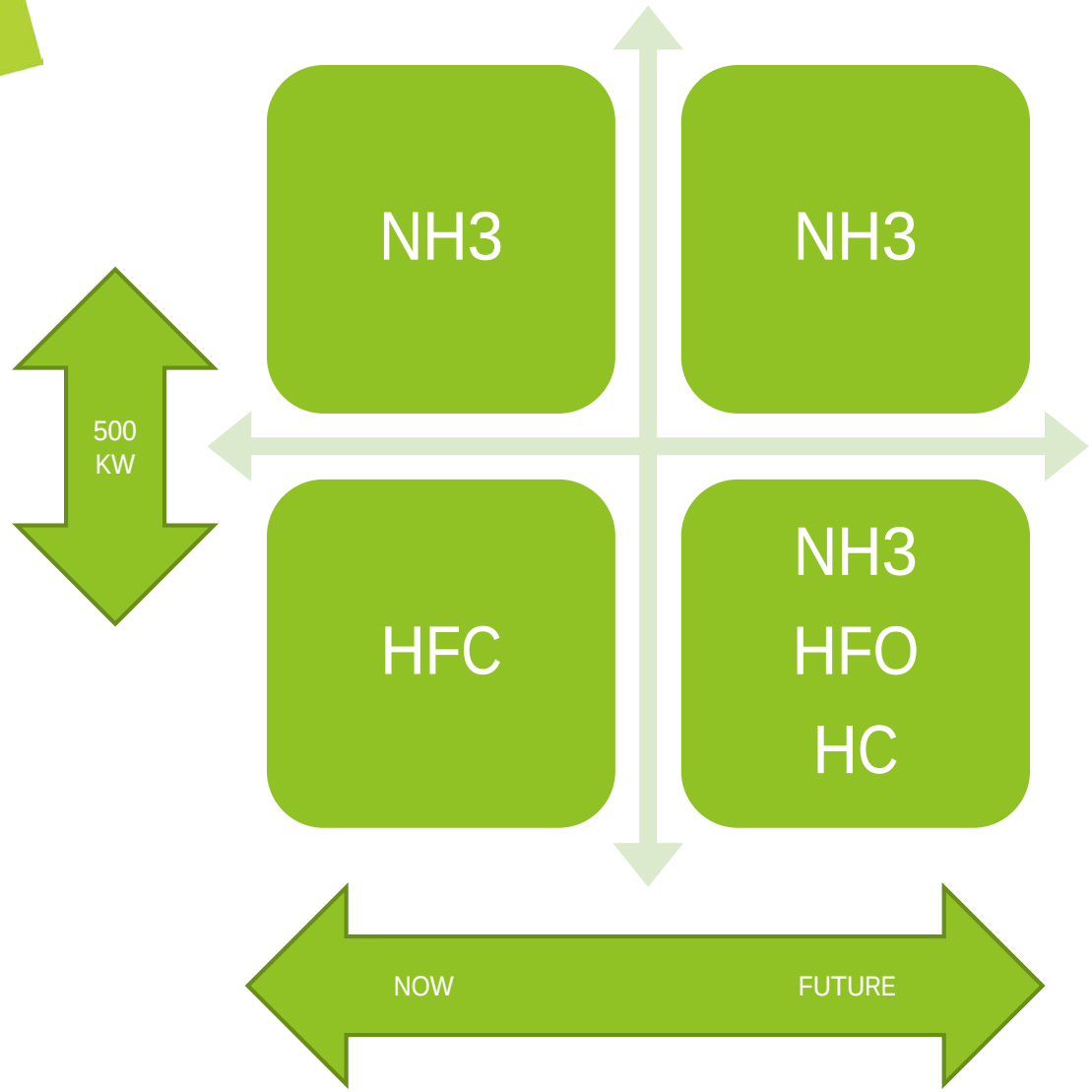
Winery Temperature Control

- Processes in the winery that require cooling:
  - Must cooling
  - Juice cooling
  - Cooling after heat treatment
  - Fermentation temperature control
  - Cold stabilizing
  - Storage
- Heat load analysis to determine Peak and Off-Peak Loads
- Secondary coolant temperature

Capital Cost

- Equipment choices:
  - Type of refrigerant:
    - Freon, Ammonia or HC
  - Type of condensing:
    - Air-cooled, water-cooled or evaporative cooled
  - Compressor type:
    - Scroll, semi-hermetic, reciprocating or screw
  - Control system:
    - Standard or custom

Winery Chillers



Running Cost

- Power Consumption:

$$\text{EER or COP} = \frac{\text{Refrigeration Capacity Output (kW)}}{\text{Power Input (kW)}}$$

- Maintenance Cost:
  - Regular maintenance cost
  - Re-commissioning cost
  - Major overhaul and/or replacement cost

Reliability

Reliability factors:

- Size of the system: sized for peak and off-peak load
- Design of the system: fit for purpose
- Type of system: understand what you are getting
- Maintenance: keep it up
- Redundancy: build it in

Carbon Footprint

- The carbon foot print of a system:
  - Resources it took to build
  - Transport
  - Energy consumption/type of energy
  - Refrigerant leakage rate during operation
  - Refrigerant at end of life for destruction
  - Recycling of materials at the end of life
  - What goes into land fill

Conclusion

- Make informed decisions based on information gathered:
  - Size
  - Capital cost
  - Running cost
  - Maintenance cost
  - Reliability
  - Total carbon footprint

Questions?