



Gordon Brothers Industries

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at WineEng 2018



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

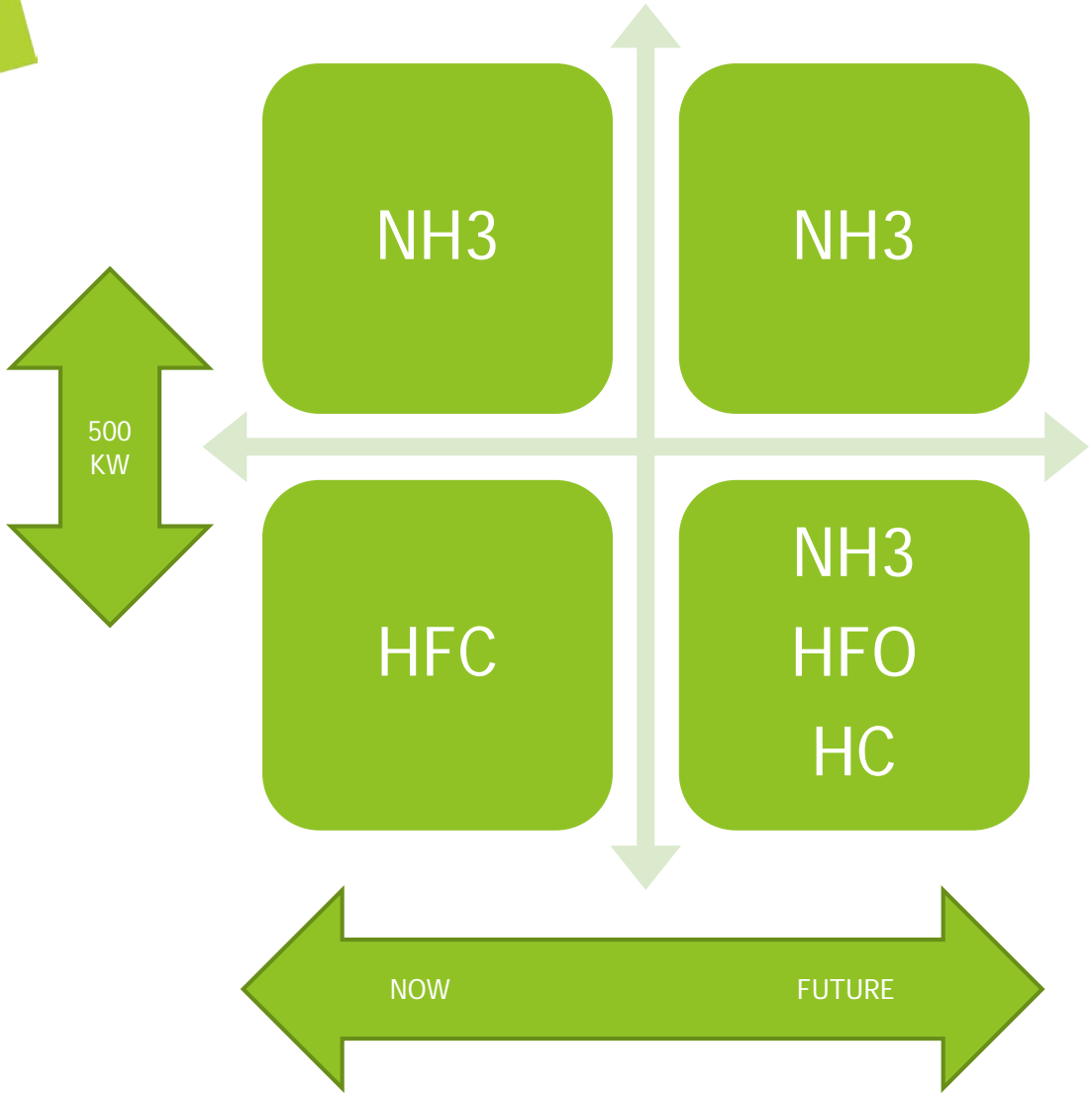


Capital Cost

- ▶ 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?