

# Cooling Tower Applications

ATC

Automatic Temperature  
Control



# Cooling Tower Applications

UNDERSTAND THE  
COOLING TOWER!



# 70°F or 85 °F?

- |                          |        |
|--------------------------|--------|
| • Centrifugal Chiller:   | 70°F ! |
| • Screw Chiller:         | 70°F ! |
| • Reciprocating Chiller: | 70°F ! |
| • Absorption Chiller:    | 85°F ! |



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Operator's job to maintain condenser  
water temperature between 70°F and  
85°F.

When.....



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The load varies between 15% and 100%  
and temperature varies from 10°F to  
80°F wet-bulb

Also.....



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Also you will be required to:

- Use minimum energy!!!
- Maintain temperature while sequencing chillers, pumps and cooling towers!
- Avoid frequent fan cycling!!
- Prevent freezing!!
- Maintain a minimal size maintenance crew!!!!!!



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How do you manage the performance of a cooling tower?

**Air management or water management?**



# VFD's

- Optimize chiller performance by allowing to run tower at full speed
- Appropriate with large or multiple cooling tower applications and wide load ranges.
- Free Cooling (Evaporative Cooling)
  - reduces over cycling of motors
  - minimizes potential of freezing - reverse rotation
- With a gear drive, an oil pump is required at low speed (<600 rpm input)
- Check w/ manufacturer for any lockout frequencies.





# Pony Motor Fan System



Baltimore Aircoil

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# Large Installations Capacity Controls

Multiple towers, chillers and pumps

- Winter operation: one chiller, one pump = one tower/cell
- Use automatic valves on inlet, outlet and equalizer
- Don't over control – 3 to 4 steps maximum
- Multiple cells does not require multiple variable frequency drives

