

ASHRAE 2011

Enhanced Sequences

ASHRAE Technical Conference

Enhanced Sequences



FHS CONTROLS

Agenda

- **Enhanced Sequences**
 - **Duct Static Reset**
 - **Discharge Air Reset**
 - **Pump Pressure Reset**
 - **Chiller/Pump Staging**
 - **Hot Water Reset**

DUCT STATIC RESET

- **Summary**
 - Reset based on greatest demand
 - 30-50% Savings
 - Trim and Respond vs. PID
- **Methods**
 - VAV box position
 - Temperature Error
- **Set Range**
 - Avoid surge area of fan
 - Lowest system flow/Max Static Pressure
 - 0.2” for low end

DUCT STATIC RESET

- **The problem**
 - **&@#\$\$% bastard box**
- **The solutions**
 - **Eliminate bastard boxes**
 - **Box Diagnostics**

DISCHARGE AIR RESET

- **Summary**
 - Reset DAT based on demand
 - Typically 55-63 Deg F range
- **Set Range**
 - Heavier interior zones have smaller range
 - Heavier Exterior zones have greater range
- **Methods**
 - Temperature Error
 - Return Air Temperature

DISCHARGE AIR RESET

- **The problems**
 - **&@#\$\$%^&\$ bastard box**
 - **High set point ranges**
 - **Humid climates – No dehumidification!**
 - **Fight with other sequences**
- **The solutions**
 - **Eliminate bastard boxes**
 - **Work with engineer to determine reset range**
 - **Box Diagnostics**

PUMP PRESSURE RESET

- **Summary**
 - Reset press set point by valve position
 - Trim and Respond vs. PID
- **Set Range**
 - Avoid pump cavitation
- **Methods**
 - Valve position
 - Temperature Error

PUMP PRESSURE RESET

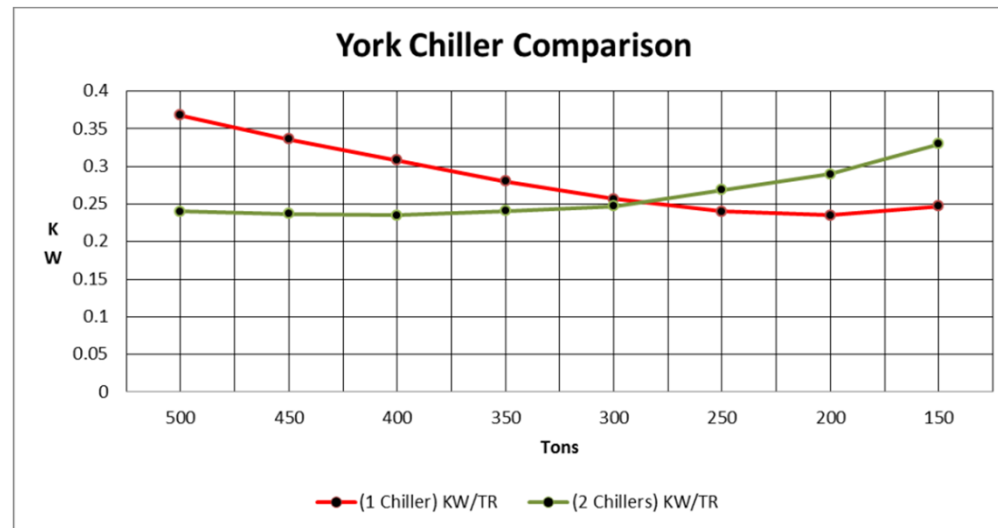
- **The problem**
 - Again with the &@#\$\$%^&\$ bastard box
- **The solutions**
 - Eliminate bastard boxes
 - Box Diagnostics
 - Fight with other sequences

CHILLER/PUMP STAGING

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- **Summary**
 - Optimizing based on part load
- **Determine Switchover**



CHILLER/PUMP STAGING

- **Methods**
 - Consider time of day – let float at the end of the day (Chiller)
 - Correlation with OAT on switchover (Chiller)
- **The problems**
 - Avoid rapid cycling
 - Changeover point impacted by other sequences

HW RESET

- **Summary**
 - Reset based on greatest demand
 - Trim and Respond vs. PID
 - Every 4 deg reset = 1% savings
- **Set Range**
 - 140-180 deg F (Less if condensing boiler)
- **Methods**
 - Based on HW valve demand
 - OAT straight reset

HW RESET

■ The problems

- Watch out for low temps on non-condensing
- Don't starve system (reset too much)
- OA Reset
 - Loss of OA – switch to alternate method

Questions

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Questions....???

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