BUILDING *performance* LAB

Zone Temperature Setpoint

Measure Description

The first and most important function of building systems is to provide a safe and comfortable indoor environment for occupants. Thus, it is important to monitor zone temperature (ZT) and its setpoint to make sure that the setpoint is met. It is also important to note if the temperature is meeting its setpoint, that it is not hunting; as well as making sure that it meets the setback, if there is one.

Kit Contents

- (1+) HOBO® wireless temp/RH loggers: MX1101 – for Zone Temps
- Phone or tablet with Bluetooth (e.g. iPad)
- HOBOConnect® mobile app

HOBO® wireless temp/RH logger

1. Configure: https://youtu.be/sbUBDB2eg_U
    a. Best practice: Configure with 15-minute time intervals and “Wrap” recording
2. Install: https://youtu.be/R9MDkohMD-E
3. Extract data: https://youtu.be/-vxr8pnguIQ
4. Use the HOBOConnect® mobile app to visualize data

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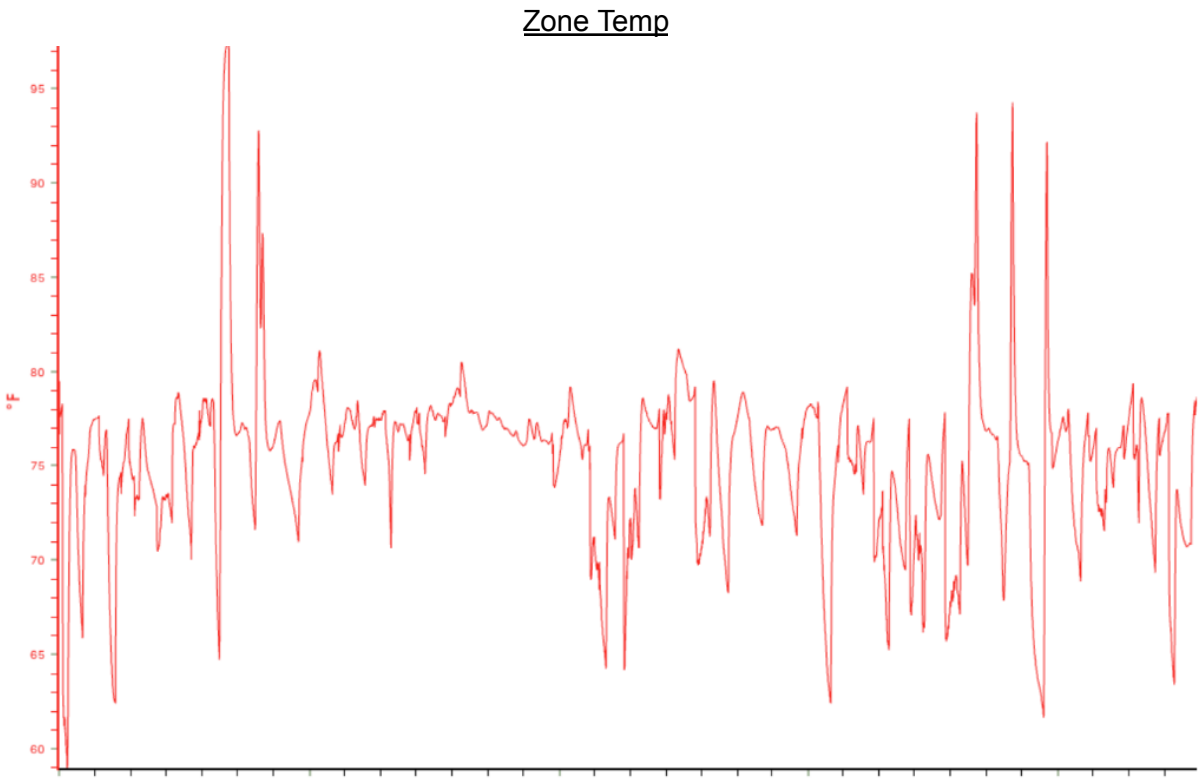
Trend Chart Example



Analysis

Looking at the trend chart above, use the following Q&A to analyze the data for opportunities for energy savings.

1. Is the ZT meeting its occupied ZT–SP?
    a. If YES, then this is a good operation.
    b. If NO, check if SAT is too high or too low in order to meet the ZT–SP.
        i. For zones where heating / cooling is provide only by the AHU / VAV, adjust DAT–SP so that ZT–SP can be met. (1425.22)
            1. Check if there is a VAV damper/actuator malfunction.
        ii. Otherwise, repair the control loops. (1425.40)
            1. For zones where heating / cooling is provided by AHU and perimeter units, make sure that all control loops are working together (not against each other) to meet the ZT–SP. For example, have the AHU provide ventilation and minimize heating with air and use the perimeter system to reach the desired temperature.

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2. Does your ZT fluctuate significantly above and below the ZT–SP?
    a. Check if your deadband is less than 4 to 5℉ (i.e., cooling set point is at least 4 to 5℉ higher than heating set point).
        i. If so, increase the deadband to 5℉. (304.03)
3. Is the zone temperature not floating toward the setback temperature during unoccupied times?
    a. Check that setback ZT–SPs are significantly different than occupied ZT–SPs (setback temperatures: 55 – 60℉ for heating, 80 – 85℉ for cooling)
        i. If not, change the setback ZT-SPs to a more aggressive setpoint. (304.02)
        ii. If not, adjust warm up /cool down start times needed to reach occupied ZT-SPs by the beginning of occupancy. (1425.05)
            1. Check that the zone is, in fact, going into unoccupied mode.
        iii. If not, schedule the system so that it goes into unoccupied mode as per the schedule. (1425.15)
            1. Check if the ZT was hot / cold enough during unoccupied times for the ZT to approach the setback ZT–SP
        iv. If so, fix the control loop during unoccupied times so ZT floats to the setback ZT–SP. (1425.41)

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