

# BUILDING *performance* LAB

## SAT Control

### Measure Description

This measure monitors the SAT to determine whether a reset or change in SAT set point can be used to operate more efficiently. The SAT reset may be manual and/or be based on the RAT.

### Kit Contents

- (2) HOBO® wireless temp/RH loggers: MX1101 – for SAT, RAT
- Phone or tablet with Bluetooth (e.g. iPad)
- HOBConnect® mobile app

### HOBO® wireless temp/RH logger

1. Configure: [https://youtu.be/sbUBDB2eg\\_U](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/-vxr8pngulQ>
4. Use the HOBConnect® mobile app to visualize data



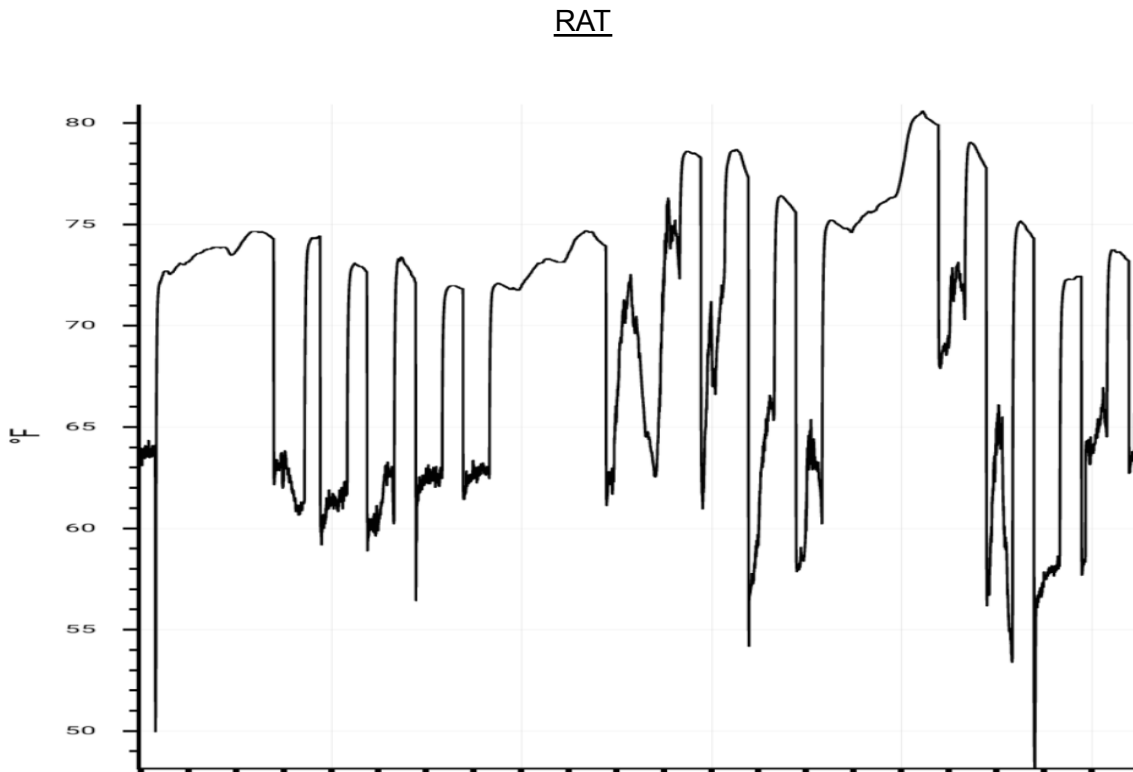
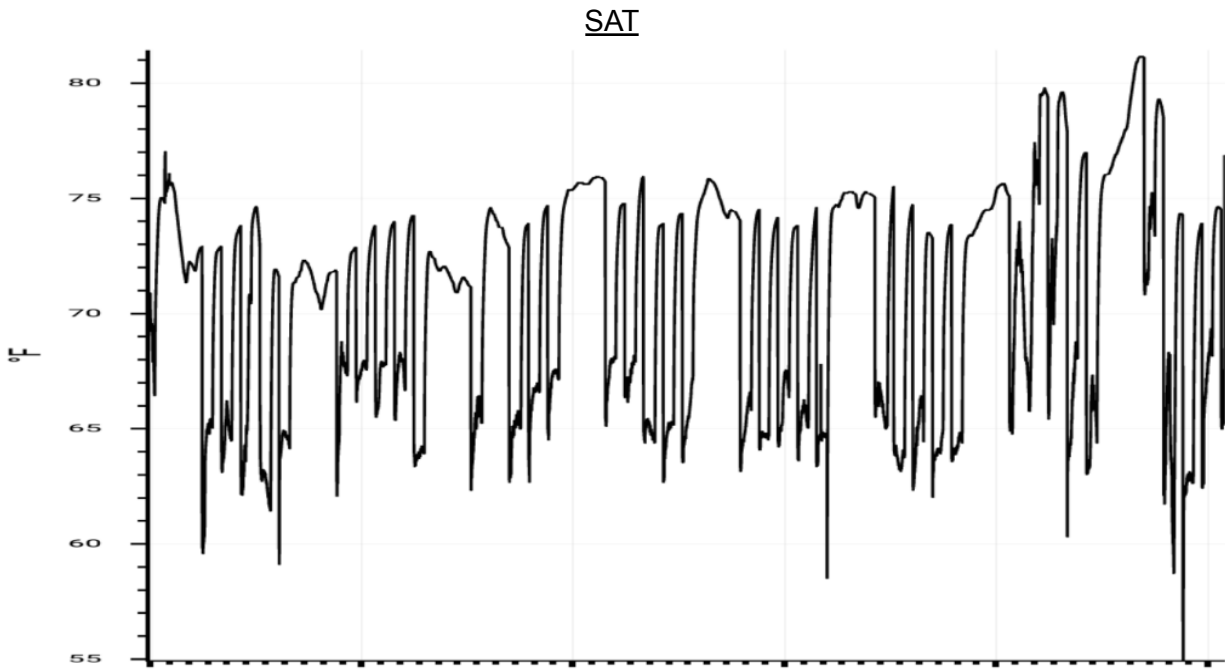
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## Trend Chart Example



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## Analysis

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

1. Is the system having trouble meeting the SAT–SP?
  - a. If NO, then this is a good operation.
  - b. If YES, **AND IF SYSTEM HAS CCV AND IN COOLING SEASON:**  
Make sure that the CCV is not leaking and is modulating to meet the SAT–SP.
    - i. If the valve is leaking, repair the CCV.([506.01](#)) or,
    - ii. If the valve is not leaking, repair the control loop. ([1425.09](#))
      1. Check if CCV is fully open and if you are still unable to meet SAT–SP
    - iii. If so, adjust ChWST set point. ([609.11](#))
  - c. If YES, **AND IF SYSTEM HAS HCV AND IN HEATING SEASON:**  
Make sure that the HCV is not leaking and is modulating to meet the SAT–SP.
    - i. If the valve is leaking, repair the HCV.([506.01](#)) or,
    - ii. If the valve is not leaking, repair the control loop. ([1425.37](#))
      1. Check if HCV is fully open and if you are still unable to meet SAT–SP
    - iii. If so, adjust HWST set point. ([211.08](#))
  - d. If YES, **AND IF SYSTEM HAS COMPRESSORS/BURNERS:**  
Make sure that the compressors / burners stage properly to meet the SAT–SP.
    - i. If not, then have tech repair or adjust the staging sequence. ([1425.37](#))
    - ii. Otherwise, have the controls tech tune the control loop between SAT and SAT–SP. ([1425.37](#))
      1. For burners, check if combustion chamber, burner, and flue have deterioration, leaks, moisture problems, condensation, and combustion products.
    - iii. If so, clean, test, and adjust the combustion process for proper operation. ([203.01](#))
      1. For compressors, check if refrigerant system temperatures are acceptable, and if refrigerant charge is sufficient.
2. Is the SAT excessively hunting?
  - a. If NO, then this is a good operation.
  - b. If YES, **AND IF SYSTEM HAS CCV AND IN COOLING SEASON:**  
Make sure that CCV/HCV work properly to meet SAT–SP.
    - i. If not, then have tech fix the control loop between coils and SAT–SP. ([1425.37](#))
  - c. If YES, **AND IF SYSTEM HAS COMPRESSORS/BURNERS:**  
Make sure that the compressors / burners stage properly to meet the SAT–SP.
    - i. If not, then have tech repair or adjust the staging sequence. ([1425.37](#))



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