

# UFAD Commissioning NREL S&TF Case Study

Presented By  
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# NREL Science & Technology Facility (S&TF)

- S&TF achieved LEED Platinum
  - Intense laboratories & office space
  - 1st government building to achieve LEED Platinum
  - 1st laboratory to achieve LEED Platinum
  - UFAD in office space only



# DDC Zone Controls for UFAD

- DDC controls on all zones in office area
- Plunger style damper w/ 9 minute motors (range of 8-10 minutes actually)
  - which once opened to 10-15% provided full airflow
- DDC controls zeroed once day to reset retained value for damper position
- Ability to close off through scheduling small areas of building with DDC controls (provide setpoint adjust & override switch on room sensor)
- Closed of all zones and measured airflow for leakage & minimum through AHU measurement
  - More accurate measurement with blower door fan setup



- No minimum position on zone controllers
- Minimum air – Manufacturer provided info stating 0.2 to 0.6 CFM per sq foot leakage through floor & carpet system.
- Underfloor cavity designed at 0.15” with multiple sensors averaged or taking minimum – lowered to 0.05”. Reset based on demand???
- No drains in floor cavity although there were water coils plus wiring/cablings
  - Recommended adding moisture sensors
- I recommend to add a few extra temp sensors
- Heating coils with FPB on perimeter utilizing return air







# Air Handling Unit

- AHU downdraft fan with
  - 100% OA economizer
  - hot water coil
  - chilled water coil
  - direct evap section
  - VFD
  - Fixed setpoint – should this be reset??
- To minimize cycling of AHU temp control components, we changed to one PID with segments for each controlled variable.





# Demand Controlled Ventilation

- CO2 sensor in space provided for demand controlled ventilation
- Maintaining calibration of CO2 sensor was an issue and will continue to be in the future
- Just a setpoint for space without having it compared to OA CO2 value – is this OK?
- With new ASHRAE 62.1 this control is of little value since you can't drop OA to zero – the building component is maintained



# Cx Process

- Cx process planned, defined and monitored by CxA, but all field work by contractors
  - Contractors provided measurement tools
  - Contractors documented all data & issues
  - It took some time to train contractor personnel
  - In the final analysis, this was a more costly method overall & took longer to perform



**Thank you for the opportunity to  
present our views of this important topic**

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