CASE STUDY APPLICATION

SCHOOL BUILDING HVAC – CONTINUOUS COMMISSIONING

Thales Academy™
DEVELOPING CLASSICAL THINKERS

PRODUCT SPOTLIGHT

THERMOTEK'S HVAC UNIT

Indoor Air Quality (IAQ) is a critical component of educational facilities. Studies show significant reduction in student performance as IAQ degrades [1]. Fresh outside air and precisely controlled space temperature and humidity create ideal conditions for student learning. However, even on the most well designed buildings, a variety of installation, startup, and system integration issues can compromise IAQ.

Fully integrated systems with 24/7 monitoring and support, or "continuous commissioning," create optimal IAQ. RuppAir provides continuous commissioning on all of RuppAir's HVAC Units through CASLink, RuppAir's proprietary building management system.

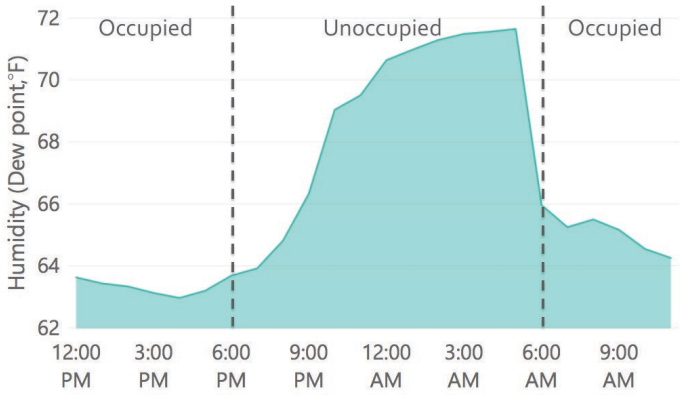
Thales Academy, an elementary school in Waxhaw, NC, uses ThermoTek's HVAC Units to handle facility-wide HVAC. After an installation oversight, the building's occupants experienced excessive humidity. Using data from CASLink, RuppAir's engineering team remotely identified the issue, incorporated the building's exhaust fans into CASLink with ThermoTek's HVAC Unit, and remotely corrected and optimized the integrated system for ideal IAQ.

SCENARIO

Initial Overnight Moisture Infiltration

CASLink data revealed excessive moisture being drawn in overnight.

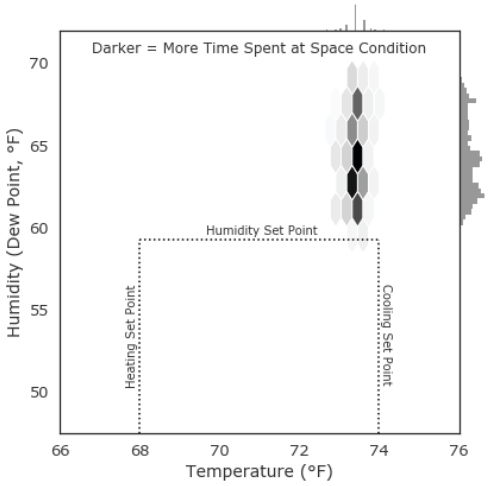
Further investigation revealed that bathroom exhaust fans were running 24/7, creating a negatively pressurized building overnight and therefore drawing in external moisture.



[1] http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002605

1. Initial Space Conditions

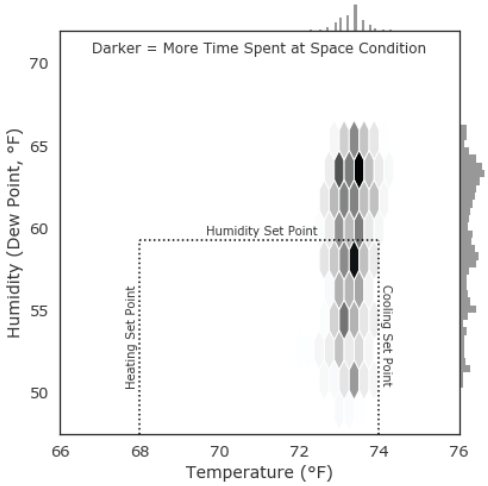
The overnight moisture infiltration was so significant that the system could not fully recover to the target humidity level during the occupancy period.



2. System Integration

Integrated CASLink controls were added to place the exhaust fans on the same occupancy schedule as the HVAC units in order to maintain building balance.

Resulting data showed improved IAQ, and indicated that further improvements were possible through system fine-tuning.

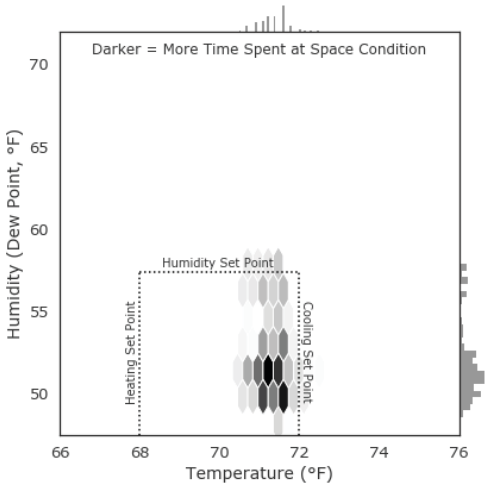


3. Remote Optimization

Further optimization through remote HVAC unit settings adjustments delivered ideal IAQ.

Key remote adjustments through CASLink included:

- Outside air (OA) dampers were adjusted to complete the building balance and concentrate the OA conditioning through the central corridor HVAC.
- The central corridor HVAC unit was given a lower dehumidification target.



CONCLUSION

Perfect IAQ in an educational facility is critical for student success. However, perfect IAQ outcomes require more than perfect engineering and high quality equipment. Continuous commissioning enables the identification and resolution of real-world variables that compromise IAQ throughout the lifetime of the HVAC system.