

Outreach Innovation Building

Penn State Research Park
State College, PA.

ASHRAE Standard 62-2001 Indoor Air Quality Analysis

An analysis for proper indoor air quality based on the ASHRAE Standard 62-2001 Addendum N was conducted for the Outreach Innovation Building in State College, PA. This analysis was done for each of the three air handling units within the building to assure proper indoor air quality for each zone. The analysis concluded that each air handling unit does comply with Standard 62-2001n, and proper IAQ is provided throughout the building.

ASHRAE Standard 62-2001 Analysis Method

For each zone all floor areas, total supply air quantities, and outdoor air quantities were found. Maximum supply air quantities were determined by summing the diffuser cfm per zone. Minimum supply air quantities were determined by the VAV box schedule per zone. The following air handling units consists of two separate units run in parallel with each other.

AHU-1: 2-10,000cfm VAV units = 20,000cfm Total

AHU-2: 2-17,500cfm VAV units = 35,000cfm Total

AHU-3: 2-35,000cfm VAV units = 70,000cfm Total

After all zones area's and air supplies were found, an ASHRAE Standard 62-2001n based spreadsheet was used to calculate Z critical.

See Appendix A for sample calculations

AHU-1

AHU-1 is a dual-duct VAV unit that mainly serves normally unoccupied areas such as server rooms, video archives, and telecommunication closets. For this reason, it was expected that the outdoor air required for this unit would be low, and the Addendum N analysis gave a low required outdoor air value.

AHU-1			
Required OA (scfm)	Actual OA (scfm)	Std. 62-2001n Comply	Unvitiated Air (scfm)
667	2000	Yes	1333

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AHU-2

AHU-2 is a dual-duct VAV unit located in the ceiling space. This unit serves the main studio, studio production and control rooms, lobby areas, and various open office/conference rooms.

AHU-2			
Required OA (scfm)	Actual OA (scfm)	Std. 62-2001n Comply	Unvitiated Air (scfm)
4123	6700	Yes	2577

AHU-3

AHU-3 is an under-floor air system with manual and automatic under-floor fan coil terminal boxes. The system has temperature based controls only and no variable air volume boxes. It serves primarily open office space. The restrooms for all three floors are also served by this unit. These restrooms have exhaust grills to maintain negative pressure within the space in order to contain odors.

AHU-3			
Required OA (scfm)	Actual OA (scfm)	Std. 62-2001n Comply	Unvitiated Air (scfm)
7287	8900	Yes	1613

ASHRAE Standard 62-2001 Conclusion

Each system does comply with ASHRAE Standard 62-2001 addendum N for proper indoor air quality. Each system supplies slightly more outdoor air than is required by the addendum. This excess is not large enough to cause concern or waste large amounts of energy, and will in turn improve indoor air quality. The percentage of outdoor air for each unit may appear low (between 3% and 11%), but this may be due to the presence of large curtain glass walls. These walls will increase the thermal load of the building which will therefore make the percentage of outdoor air required seem smaller. These outdoor air percentages seem reasonable for each air handler and its respective zones.