Selection

When selecting EZT single duct variable air volume terminals, several factors must be considered to make the proper selection including:

- Air Flow and Air Pressure Drop
- Sound
- Heating (if required)
- Controls

Air Flow and Air Pressure Drop

All EZT units can operate over a wide range of airflow. The minimum airflow shown for each unit is the lowest airflow at which the airflow sensor can generate an adequately strong signal for the pressure independent controls to operate properly. The maximum airflow shown for each unit is based on the industry practice of limiting the inlet air velocity to reasonable levels.

The units selected should be sized where the design airflow is between the maximum and minimum airflows shown in table 4. Referring to table 7 if 1400 CFM is the maximum design airflow, a unit with a 12 inch inlet can be selected with an air pressure drop of 0.01 inches w.g.

Sound Performance

Tables 9 thru 13, 15, 16 indicate the sound power levels of each unit at varying air flow rates and inlet static pressures. Disregarding other factors and/or equipment that could contribute to the noise in the occupied space, these ratings along with the acoustical environment in which the unit operates, will determine the perceived noise level.

Noise generated within the terminal and emitted through the discharge air (discharge sound) will be attenuated by any ductwork downstream of the terminal. The noise emitted through the casing of the terminal (radiated sound) will be attenuated by the room's ceiling. Depending upon the application, either the radiated or discharge noise level will be the relative higher and determine the perceived noise level in the occupied space. The occupied space itself will provide further attenuation depending on the acoustical characteristics of the walls, floors and internal furnishings.

All manufacturers must make certain assumptions on the acoustical environment of the application and then apply these assumptions to the unit's sound power ratings to determine the resultant sound pressures and perceived noise level in the occupied space. While the AHRI sound power ratings have been certified and can be accurately compared from one manufacturer to another, the NC values predicted will be dependent upon the acoustical assumptions made.

When selecting terminals, check the attenuation assumptions before comparing cataloged NC values. Anemostat uses the AHRI Standard 885, Appendix E attenuation assumptions for determining the anticipated noise levels. The attenuation assumptions in this standard are outlined in Table 2.

Table 2: AHRI-885 Attenuation Table

	Octave Band						
	2	3	4	5	6	7	
Radiated	2	1	0	0	0	0	Environmental Effect
All Sizes	16	18	20	26	31	36	Type II Mineral Fiber
	18	**19**	**20**	**26**	**31**	**36**	**Total dB Reduction**

	Octave Band						
	2	3	4	5	6	7	
Discharge	2	1	0	0	0	0	Environmental Effect
Sizes 5-7	2	4	10	20	20	14	5 ft., Duct Lining (12x12)
(300-700 cfm)	9	5	2	0	0	0	End Reflection
	6	10	18	20	21	12	5 ft., 8 in. Flex Duct
	5	6	7	8	9	10	Room Effect
	3	3	3	3	3	3	Sound Power Division
	27	**29**	**40**	**51**	**53**	**39**	**Total dB Reduction**

	Octave Band						
	2	3	4	5	6	7	
Discharge	2	1	0	0	0	0	Environmental Effect
Sizes 8-24x16	2	3	9	18	17	12	5 ft., Duct Lining (15x15)
(>700 cfm)	9	5	2	0	0	0	End Reflection
	6	10	18	20	21	12	5 ft., 8 in. Flex Duct
	5	6	7	8	9	10	Room Effect
	5	5	5	5	5	5	Sound Power Division
	29	**30**	**41**	**51**	**52**	**39**	**Total dB Reduction**

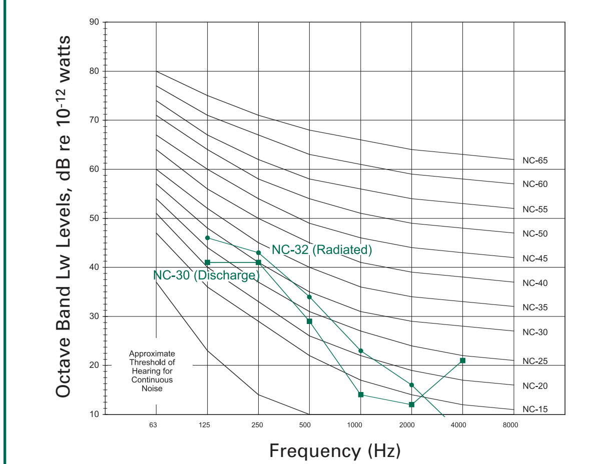
The noise level desired in any given space is a function of the activity for which the space is intended. Typical NC design values for various applications are:

Table 3: Typical NC Design Values

Hotel rooms	**25 - 35**
Offices and conference rooms	**25 - 35**
Open offices	**30 - 40**
Classrooms	**35 - 40 (max)**
Churches	**25 - 35**
Hospital wards	**30 - 40**
Gymnasiums	**40 - 45**
Libraries	**30 - 40**

The NC curves are intended to reflect a human's perceived noise comfort. Plotting the anticipated sound pressure by octave band and determining the tangent NC curve reached throughout all octave bands (using the acoustical assumptions) will indicate the NC value anticipated.

Example of NC Curve Plot



NC Curves for Specifying the Design Level in terms of the Maximum Permissible Sound Pressure Level for Each Frequency Band

Radiated Lw – 1400 CFM @ 2.0" w.g. Inlet Ps	63	125	250	500	1000	2000	4000	8000
Lw Data	-----	64	62	54	49	47	42	-----
Attenuation	-----	18	19	20	26	31	36	-----
Plotted Data	-----	46	43	34	23	16	6	-----
NC	-----	27	32	29	21	17	-----	-----

Discharge Lw – 1400 cfm @ 2.0" w.g. Inlet Ps	63	125	250	500	1000	2000	4000	8000
Lw Data	-----	70	71	70	65	64	60	-----
Attenuation	-----	29	30	41	51	52	39	-----
Plotted Data	-----	41	41	29	14	12	21	-----
NC	-----	21	30	24	-----	-----	24	-----

Notes:
Size 12 EZTS
Radiated sound in the 250 Hz (third octave) is the Controlling Band

Heating (If required)

Hot water heat – Select the hot water coil that provides at least as much heating output as required (based on the design conditions).

Using our example of a 12" size unit, if the design heating airflow is 800 CFM for the heating coil selection, the heating capacity desired is 29 Mbh, the entering water temperature is 180 degrees F and the entering air temperature is 55 degrees F, using Table 21 would indicate that a 1 row coil supplied with 4 GPM of hot water would be required.

The air pressure loss for the heating coil selected at the maximum design airflow for the terminal (1400 CFM) must be added to the EZT terminal's air pressure drop. The heating coil air pressure drops are also shown in Table 7. In our example, the air pressure drop across the coil is 0.24 inches w.g. This would be added to the terminal's air pressure drop of 0.01 inches w.g. at the design maximum airflow of 1400 CFM, which results in a total air pressure drop of 0.25 inches w.g.

Electric Heat – The wattage of electric heat needed is determined by dividing the heating required in Mbh by 3.414, which results in the KW of heating required.

Using our example, it would require 8.5 KW of electric heat to provide the 29 Mbh heating capacity. Using table 25, the electric coil with 8.5 KW would be selected. Electric heat can be staged or modulated.

Note that the electric coil has an air proving switch, which requires a minimum of .07 inch w.g. total pressure entering the coil to prove airflow.

Also note that it's prudent to check the air temperature leaving the heating coil at the design airflow. Using the previous example, the resulting leaving air temperature would be approximately 89 degrees F, which would generally provide a comfortable environment and proper air distribution.

Control Sequences

A wide array of control sequences are available as standard on Anemostat's EZT single duct variable air volume terminals. Tables 26 and 27 indicate the control sequences available as standard. Special sequences can also be provided.

Pages B-28 through B-32 describe and depict the operating performance for some of the more common control sequences.