K-SELECT ALTITUDE CORRECTION

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The K-Select VAV Product selection program allows the determination of many performance factors for a VAV terminal unit. In the past, we were asked to correct the water coil BTUH output for altitude, and that is the way the program has operated for the past few years. Airflows were uncorrected. The program however uses SCFM (airflow at standard conditions (density = 0.075 pcf)) in calculating all data.

Recently, we decided that the proper approach was to correct all data for altitude. In order to understand the implications of this change, we have provided the following guide.

Previous versions of K-Select VAV terminal unit election program (through v6.0) corrected the BTUH (and LWT) output by adjusting the output by 2%/1000 ft. altitude. This was the only altitude correction.

Subsequent revisions (v8.0) correct data on the following basis.

1) The user will select a default altitude in the front screen (under defaults) of the program. This should be a mean pressure altitude.
2) The user should input all airflows and design pressures at local conditions, which means that airflows are not in SCFM, but local cfm.
3) The program will convert the input airflows (and minimum required and downstream) pressures to standard conditions, perform all calculations, and reconvert answers to pressure altitude conditions.

The impact can be seen in the following examples for a size 12, single duct VAV terminal unit.

Case 1, LMHS Size 12 (No Heat or Electric Heat)

	Max. Airflow	Min. Airflow	Inlet Ps	Downstream Ps	Minimum Ps
Sea Level	2000	1000	1.0	0.25	0.16
3000 ft.	2000	1000	1.0	0.25	0.13
5000 ft.	2000	1000	1.0	0.25	0.11

Case 2, LMHS Size 12 (Hot Water Heat, 2.0gpm, 1-Row, 180/180EWT)

	Max Airflow	Min Airflow	Inlet Ps	Downstream Ps	Minimum Ps	MBH	LAT	LWT
Sea Level	2000	1000	1.0	0.25	0.51	26.7	80	153.3
3000 ft.	2000	1000	1.0	0.25	0.48	26.4	82	153.6
5000 ft.	2000	1000	1.0	0.25	0.47	26.2	84	153.8

The impact of the change is that it may change box sizes at the boundaries of pressure limitations, and with fan boxes, it may result in allowing greater downstream pressure for a given fan curve.

Note: Displayed fan curves are always at sea level airflows.

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