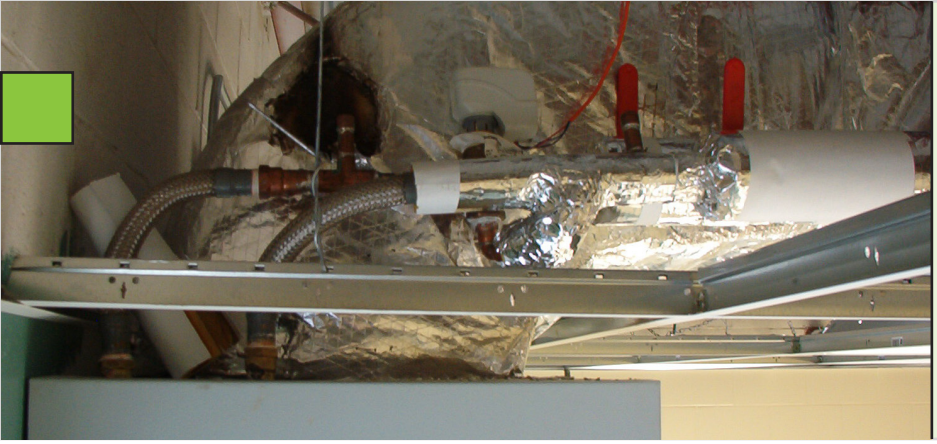

Ducting Tip

Always install turning veins at the top of the unit and insulate at least the first 10 feet of duct trunk. Ducting the complete system is preferred but always, always attenuate the first 10 feet. ■

TIPS ON GOOD DUCT DESIGN

How duct design affects a unit's performance

A classroom air handler will only perform perfectly if all aspects of the application design and installation are completed correctly.

Many projects have superior products with the right application and then fail to deliver an acceptable result due to poorly designed duct work or an inferior installation.

Change'Air offers solid advice on how to design a good air distribution system that will complement an excellent piece of mechanical equipment. When using the term "installation", we are referring to design of the air distribution of a terminal unit not the quality of workmanship.

The ultimate goal is to properly install the Classroom Air Handler so it can perform as per the specifications. To achieve this goal we begin by recommending that every terminal unit installed in a room space with occupants be designed as a ducted system. This is very important as face discharge units or equipment with plenum discharge grilles are limited to moving air from a single location and due to the proximity of the discharge to the supply fan will struggle with sound issues as they increase airflow volumes.

Given that ducted equipment is best, let's look at some good design practices that you should follow.

4 Good Duct Design Practices

1. Sound Everyone wants equipment that can't be heard and for the equipment to operate at its optimal sound level. To do this the duct distribution must be designed properly. To maintain proper sound levels, the plenum and main trunk line should be properly sized (Cfm-Velocity/Static Pressure) and acoustically lined. Options inside the duct are acoustic insulation or perforated liner.

2. Velocity To eliminate stratification the branch ducts must be sized properly and the correct diffuser/grille must be selected. Always check the neck size, face size, neck Velocity, Cfm, NC and throw (with regards to your ceiling height).

3. Cfm\Circulation The amount of total Cfm should be at least 1 Cfm per 10 Cu.Ft. of air space.

4. Ventilation The National building code calls for a capacity of 450 Cfm and maintain CO2 levels below 1000ppm or no more than 600ppm above ambient. To ventilate efficiently, design mechanical equipment with multispeed Energy Recovery Fans and monitor/control CO2 levels by varying ventilation rates.

Why is all this important?

Why is all this important?

Because delivering good airflow distribution will result in good temperature control, good air quality, no drafts (warm/cold pockets) and very importantly, a system that is as quiet as it possibly can be.

Several key points must be remembered to achieve these results and please remember, this is not a comprehensive list, just several things we as a manufacturer have seen repeated often enough to write about.

4 Key Points To Achieve Optimum Performance

1. Always duct your equipment. Don't cut corners with reduced budgets and pay the price later.

2. Always install turning veins at the top of the unit and insulate at least the first 10 feet of duct trunk. Ducting the complete system is preferred but always, always attenuate the first 10 feet.

3. Never install a diffuser within the first seven feet of the duct trunk.

4. Do your homework with a qualified engineer or duct design specialist. Every project and building has its own individual challenges and there is no shortcut to professional experience.

Terminal air handler units can be installed into a classroom and be seamlessly integrated into that environment without sound disruptions or comfort issues. In fact they add a level of efficiency and control that central systems cannot offer.

A poorly installed terminal unit, can turn a facility manager away from the design but a well installed unit is achievable. The terminal air handler design is a proven design and has delivered exceptional results in thousands of classrooms every year.

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