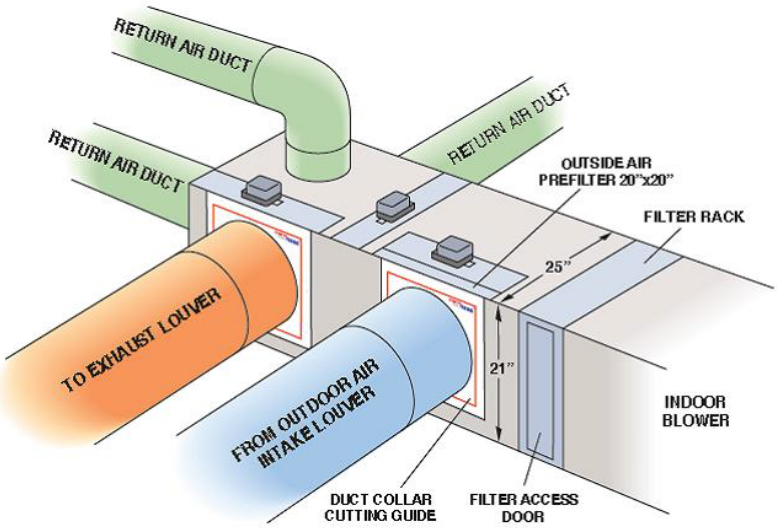
2009 I.E.C.C. Commercial Energy Code Requires Economizers

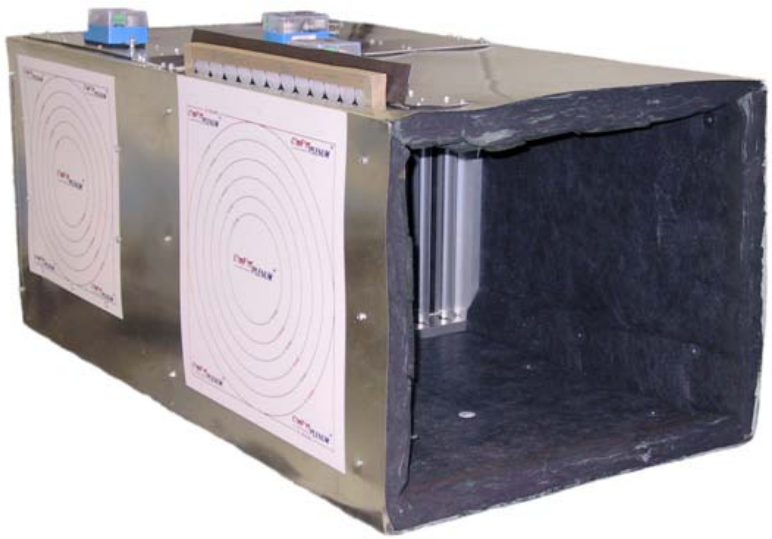
By Greg Talley

Cities including Fort Worth, Texas have adopted the 2009 I.E.C.C. Commercial Energy Code which states that all commercial HVAC systems greater than 54,000 Btu's of cooling will require an economizer. Yes, even split systems. That requires the Contractor to coordinate the space and the controls for an economizer in an already crowded ceiling. We offer a solution for a 5-ton split system that requires no more space than a standard 4 foot long return air plenum. The dampers are built into the plenum. The controls are simple to install and straight forward to operate. You will need to use 16" round duct for Outdoor Air and 14" round duct for Exhaust Air. We provide Outside Air louvers upon request. Training your people and technical support starts when you're ready.



FREE Cooling is now available in light commercial buildings such as doctors' and dentists' offices, real estate offices or even high-end residential homes, especially buildings with the outstanding insulation packages that control sensible heat in summer but holds in heat very well in winter. You can PROFITABLY furnish your client with up to 100% outside air when that air is suitable for cooling instead of energizing the condensing unit. EconoPLENUM™ will close a damper between the front half of the plenum (where the pre-filtered Outdoor Air damper is located) and the back half of the plenum (where the return air ducts are tied in). Also, we open the Exhaust air damper in the back half of the plenum.

Remember the Whole House Attic Fan? The only problem was you had to open windows to allow air to be drawn into the space. We don't open windows like we used to because of security issues and the extreme negative pressure placed on the building makes it hard to keep clean. Today, the indoor blower motor is much more efficient than the old capacitor-start motor. We pre-filter the Outdoor Air then through the filtration system of the air handler, through the equipment and into the space. Ventilate any room by opening the window and push air out of that window. Also, EconoPLENUM has an Exhaust Damper that will maintain a slightly positive pressure on the building without any windows open.



How the economizer works: On a call for cooling, the controller measures Outdoor Air temperature. If the Outdoor Air is below a setpoint temperature that is suitable for cooling (say 56^{o}F) the indoor blower is energized and the Return Air damper is closed and the condensing unit is not energized. Simultaneously, the Outdoor Air damper and the Exhaust damper are opened. Outdoor Air is drawn in by the indoor blower and dispersed to

satisfy the cooling call. Since the Return Air damper is closed the conditioned space is being pressurized. If no windows are open, positive pressure is allowed to escape to the outside through the return air ducts, into the back half of the EconoPLENUM, where the exhaust damper is open. Most of the indoor air is exhausted since it is being replaced with outside air. Only a slight positive pressure is on the building so that doors close properly. The most economical advantage of EconoCONTROLLER is the Mechanical Cooling Assistance Mode. This monitors the Return Air temperature with the use of a Return Air temperature sensor (included). EconoCONTROLLER will compare Return Air temperature to Outdoor Air temperature. If conditions are suitable, we bring in Outdoor Air, mix it with Return Air and use this to support mechanical cooling and significantly reduce the load on the HVAC unit.

So far, cities have accepted the dry bulb version of EconoCONTROLLER since Outdoor Air at 56^{o}F and 95% relative humidity are the same total heat (Enthalpy) conditions as air coming from an evaporator coil at standard AHRI conditions. Yes, the psychometric chart cannot tell a lie. But, for those engineers that want enthalpy control, we can also provide an Enthalpy Control that will measure and operate using adjustable Enthalpy.

- A consensus of prominent building science engineers recognize as much as 20% of the total annual cooling cost can be eliminated by using economizers in commercial buildings.
- Provide FREE Cooling to your clients in cool weather and ventilate the building.
- Ventilate upon client demand or automatically ventilate several times per hour with EconoCONTROLLER.
- Demand-control Ventilation is also available measuring carbon dioxide and opening fresh air to dilute stale building air when the people load requires it.

Comfort Products, Inc. specializes in solutions for HVAC issues that could bite the Contractor in the billfold, which is the only thing protecting his, well you know. Your comments and questions are always welcome at gtalley@comfortproductsinc.com.