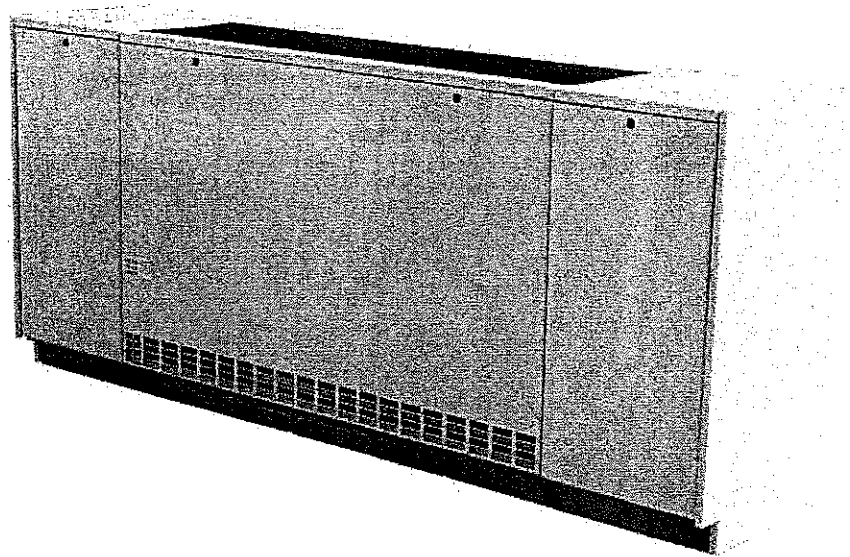




TRANE®

Classroom Unit Ventilator

**750 CFM to 1500 CFM
Vertical Classroom Unit Ventilator
Model VUV**



May 2006

UV-PRC003-EN



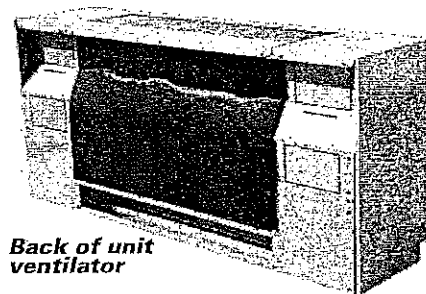
Introduction

The Exemplary Trane Classroom Unit Ventilator

Academic performance of U.S. students depends, in part, on the ability to create a comfortable learn-friendly surrounding. Being too hot or too cold could hinder a student's ability to achieve academic excellence.

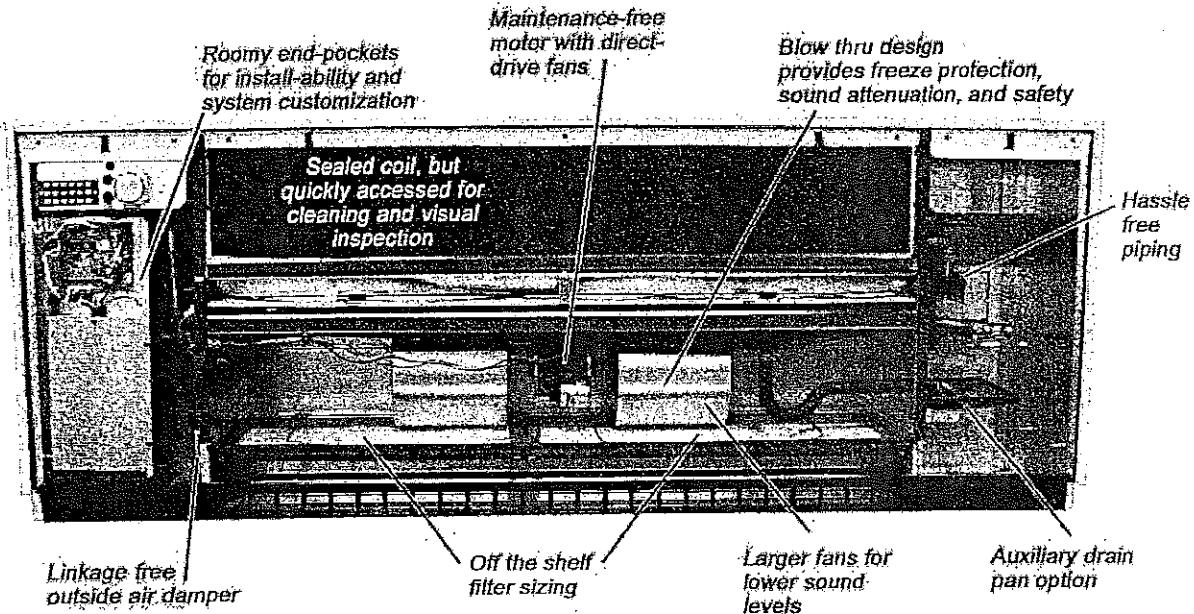
Seasonal changes, mechanical/building disrepair, and even class attendance provide real challenges to HVAC mechanical systems. The only thing consistent about today's classroom is its ability to constantly change. With this in mind, Trane introduces a NEW classroom unit ventilator design to support today's changing environment.

Available in a floor mounted configuration, the NEW vertical unit ventilator exceeds today's school or university stringent requirements. By focusing on issues such as noise, indoor air quality, maintenance and cost of energy, Trane has RE-developed a unit ventilator to meet the classroom of today, and of the future.



Back of unit ventilator

Trane Vertical Classroom Unit Ventilator





Application Considerations Energy Efficiency

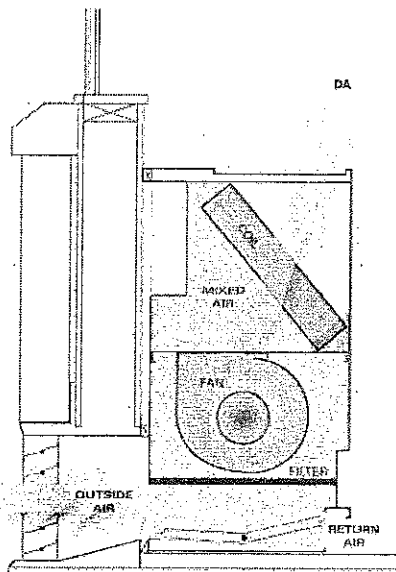


Figure 8: Unit ventilator economizer



Figure 9: ARI-840 certification

A Choice in Energy Optimization

The energy consumption of a unit ventilator system can be significantly reduced through the use of an economizer cycle. To better understand the basic function of how an outside air economizer works, it is important to fully understand how it operates.

The economizer functions by opening an outside air damper, and bringing cooler outside air into the space. The economizer cycle is controlled with a modulating damper motor, which opens at specified increments dependent upon readings from outside air sensors.

Economizers also utilize a return-air damper that closes as the outside air damper opens. Depending on the room requirements, the modulating damper motor may mix the return air with the outside air to provide the maximum energy cost efficiencies without sacrificing comfort, *Figure 8*.

When the room thermostat calls for cooling, the economizer control provides the right mix of outside and return air to cool the classroom. The equipment's airflow is generated from both fan energy and the economizing dampers. This design supports optimum ventilation and provides the greatest energy savings. As the outside air temperature rises (typically above 55 F), the outside damper closes to the minimum position, activating the second cooling stage on the room thermostat -- the cooling-generating device (compressor, water pump, chiller, cooling tower). The return-air and outside air dampers modulate to support the discharged air temperature.

Dampers working together with the cooling coil is called integrated economizing, which allows a unit ventilator to mix outside air with return air, delivering an energy-efficient, cost-savings solution to a school.

Industry Standards

The Air Conditioning and Refrigeration Institute (ARI) created the ARI-840 standard for classroom unit ventilators to provide a consistent method of rating the unit ventilators design performance. To achieve ARI-840 certification, the unit ventilator must be capable of providing a minimum of 80-percent of its ventilation (airflow) through the outside air economizer function. This measurement ensures that the expected energy savings by the economizer is realized in actual operation.

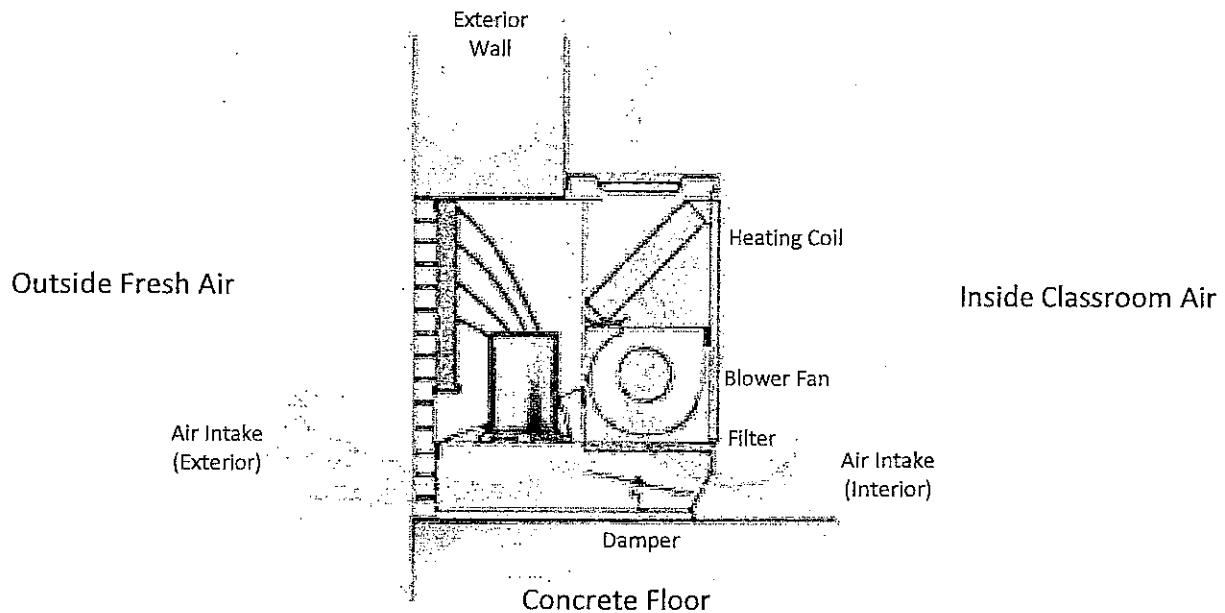
Only ARI-840 certified equipment (*Figure 9*) has been independently tested for compliance to the minimum requirement. Trane was the first, and continues to be one of the few manufacturers that meet this certification. By meeting this certification, the designer can be assured that Trane's unit ventilator will perform with energy conservation in-mind.

Unit Ventilator – Side View

Left side – Outside air is brought into the building as a fresh air source.

Right side – Classroom air is circulated through the unit to warm and filter the air.

- All air is pushed upward through vents into the classroom.
- Damper rotates to balance outside and inside air.
- Air is blown across a heating coil to warm it.



Classroom and Hallway Air Flow Diagram

Fresh air intake in classrooms is balanced by exhaust fans removing air from buildings through the roof.

