



**Dual Inlet  
Diffuser  
UNI2-DI**



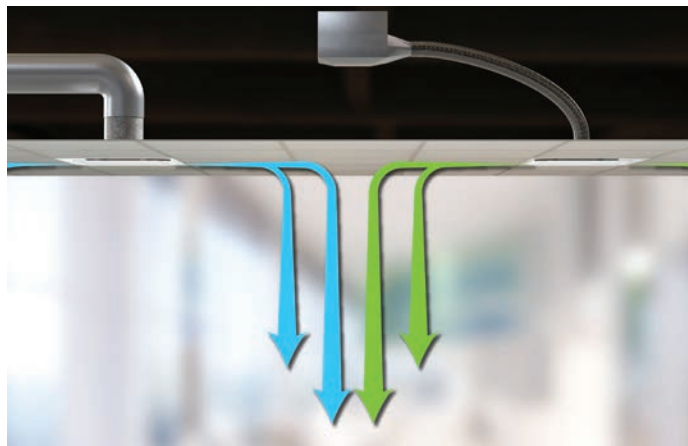
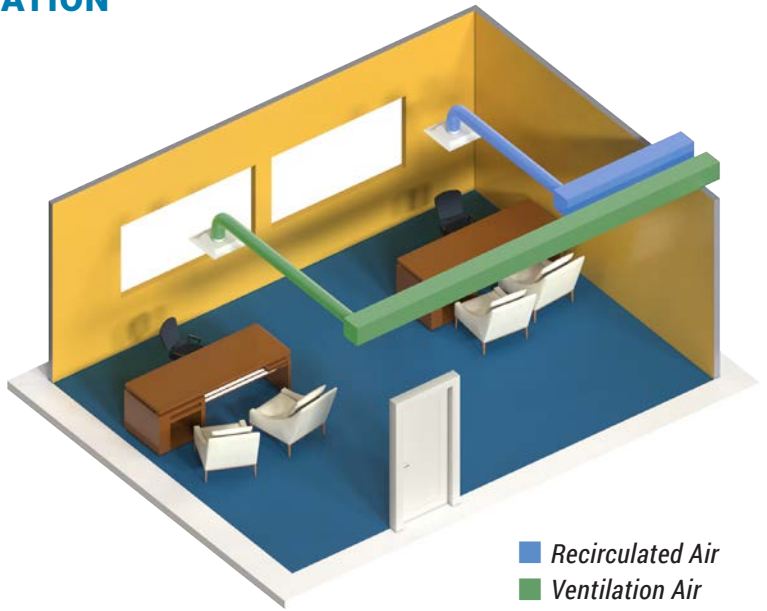
***UNIform Ventilation***

 **Nailor<sup>®</sup>**

[nailor.com](http://nailor.com)

## VENTILATION DESIGN & ROOM STRATIFICATION

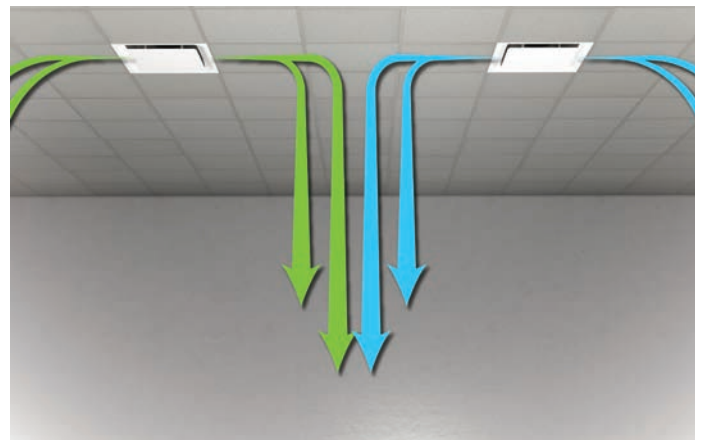
ASHRAE 62.1 provides the required minimum ventilation air to maintain the health and wellness of the building occupants based on the activities in the space. **The goal of ventilation is to ensure all occupants experience the benefits of fresh air.** In some system designs, the ventilation air is provided by a dedicated outside air system (DOAS) and delivered through a separate diffuser. The rest of the cooling/heating is handled by recirculated air that is treated by a building system and distributed separately.

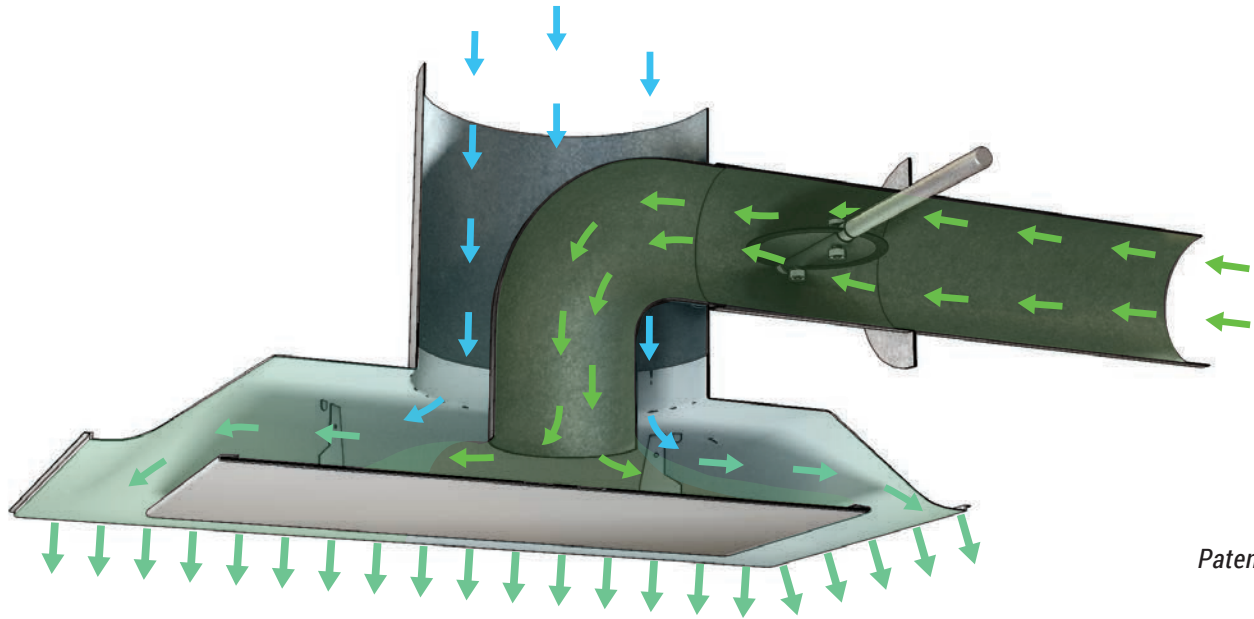


While this design satisfies the code, the two airflows do not mix in the space. This little-known phenomenon causes stratification of the air in the room, allowing some areas to receive more ventilation air than others. Nailor has performed detailed testing to prove this at Energistics Laboratory in Houston, TX. Regardless of air volume and temperature differences between the recirculated and ventilation air, airflows stay independent in the room.

Stratification causes multiple problems for the occupant. First, this will leave one part of the space under ventilated resulting in lower air quality in the other. Dependant on thermostat location, it could cause a disconnect between the comfort in the space and the control of the recirculation air handling unit.

To combat these challenges, Nailor has introduced an innovative solution that provides uniform ventilation and control for a healthy comfortable space.





The UNI2-DI provides a reduced size side inlet for fresh air and a main inlet for recirculated air. The figure above shows the air movement through the inlets, green arrows represent ventilation air and blue arrows recirculated air.

**The two airflows mix in the diffuser before entering the space, ensuring uniform delivery of both airflows.**

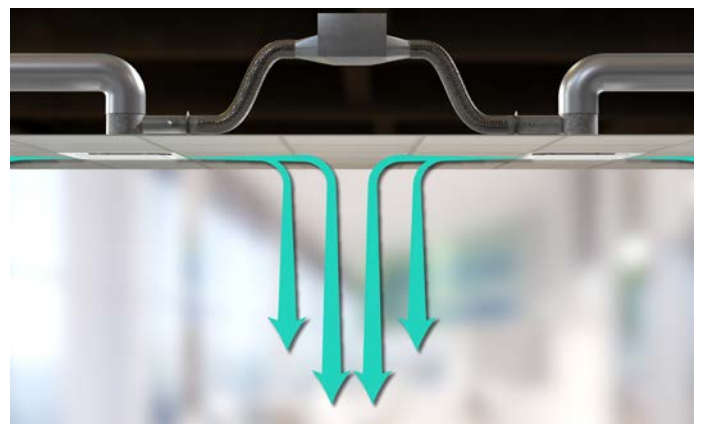
While delivering uniform ventilation is the goal of the UNI2-DI, the addition of a control damper and flow sensor to the fresh air inlet provides additional benefits. Independent control of the fresh air enables demand control ventilation and advanced economizer options for additional energy efficiencies.

## FEATURES

- UNI Plaque Diffuser with dual air inlet
- Recirculated Inlet size 8" (203), 10" (254), 12" (305) or 14" (356)
- Ventilation Inlet 4" (102), 5" (127) & 6" (152) flex connection
- Even air flow for tight Coanda Effect
- 360° airflow pattern
- Minimum NC Levels

## BENEFITS

- Deliver uniform recirculated and ventilation air to your space
- Additional inlets do not affect the look of the diffuser to the occupant
- Air distribution performance the same as the original UNI2, no special design considerations
- Same NC levels as original diffuser



## OPTIONS

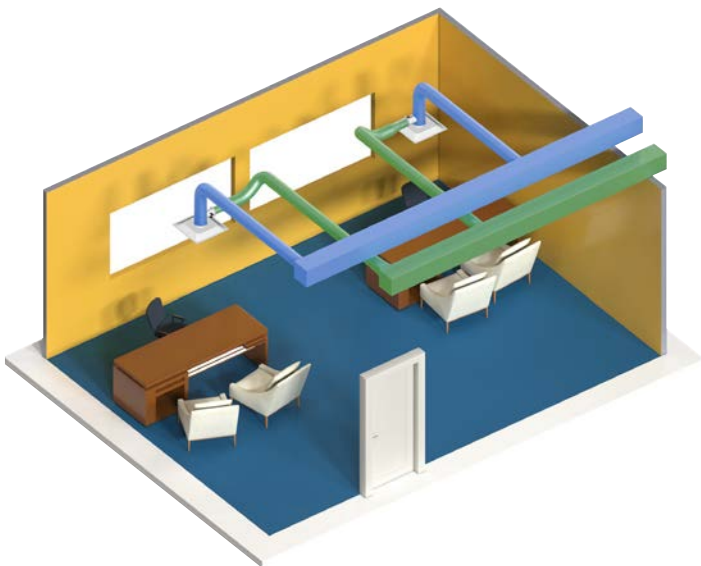
- Balancing Damper
- Ventilation Control
  - Control Damper with Flow Sensor
  - Constant Volume Regulator
- Molded Insulation Blanket
- EQT Earthquake Tabs
- QB Quadrant Blanks

## OCCUPANCY BASED VENTILATION

One of the major users of energy for a building is the conditioning of the required ventilation air. Various building spaces such as conference rooms, storage rooms, auditoriums, etc. are used intermittently. Most of the time, they are ventilated for no reason. Using an occupancy sensor a CO<sub>2</sub> monitor in the space will allow it **to only be ventilated when necessary**. This reduces the overall load on the HVAC systems during unoccupied times and reduces the energy used by the building.

## ECONOMIZER

Part of the year, outside air can be delivered to a space without the need for conditioning, known as economizer mode. Traditional economizer mode reduces energy use by eliminating the need to condition the ventilation. Adding ventilation control at the UNI2-DI would enable the economizer mode to handle more than just the ventilation, extending the economizer savings. In this scenario the DOAS would increase supply and the recirculating air would decrease accordingly, satisfying the comfort in the space while **drastically reducing energy** use.



## Frequently Asked Questions

### How have you overcome crossflow from one inlet into another?

The ventilation inlet position has been optimized to ensure the flow from both inlets moves directly into the space regardless of the airflow and pressure from the opposite inlet.

### How does this affect the temperature control in the space?

Uniformly distributing the ventilation and recirculated air provides an accurate picture of space conditions to the thermostat. This allows the recirculating air handling unit to respond accordingly.

### How would demand control ventilation work?

Choosing the option of a control damper and flow sensor allows the unit to control the flow of ventilation air to the space. With the use of an occupancy sensor or CO<sub>2</sub> monitor, the damper in the diffuser can open or close based on the needs of the room. Variable Air Volume DOAS system will increase or decrease the airflow based on the demand in the space.

### I have a specific control system and actuator I want to use, will Nailor factory mount it?

Nailor will install any control actuators.

### What other technologies can be used to control ventilation?

The Nailor 33SZ Fan Powered Chilled Water Terminal Unit provides the ability to mix ventilation & recirculated air, control temperature, and control ventilation. This system eliminates the need for a recirculation air handling unit, placing the cooling closer to the space it serves. If higher latent loads are present, the DOAS can be paired with Nailor 35FH Fan Coil Units with outside air inlets.

