



Trane Total Outdoor Air Unit

Create Comfort and Efficiency
in Your Restaurants with a
Total Kitchen HVAC® Solution



Achieve the perfect balance of comfort and efficiency



Now you can solve indoor air quality challenges by properly conditioning 100% outdoor air to provide consistent, comfortable temperature and humidity levels throughout dining and kitchen areas while reducing energy use. For restaurant owners and operators using the Trane TOAU, this means:

- Consistent comfort for guests and employees
- Lower energy costs
- Improved air quality
- Humidity control — less moisture damage in your facilities

Consistent comfort for guests and employees

A large volume of outside air is needed to replace exhaust air in commercial kitchens. The Trane TOAU properly heats, cools and dehumidifies 100% of the outside air needed. This minimizes the extreme conditions in both cooking and dining areas, helping provide proper temperature and humidity throughout the facility for superior guest comfort and ideal working conditions.

Lower energy costs

You want an energy efficient, quiet HVAC solution for your restaurants. With the TOAU, make-up air units and HVAC units no longer need to “fight” with one another to maintain proper conditions. This lowers energy costs, often by 20 to 35% compared to applications using traditional make-up air units. For example, one chain was able to save \$6,850 per year per facility due to lower energy costs with TOAU.

Create the ideal dining environment

Improved air quality

Correctly balancing air pressure is made easier with an HVAC system that includes the Trane TOAU. Kitchen odors stay in the kitchen. Unwanted humidity is reduced throughout the facility so air feels dryer and cleaner, creating a more comfortable environment for restaurant patrons and your employees.

Humidity control — less moisture damage in your facilities

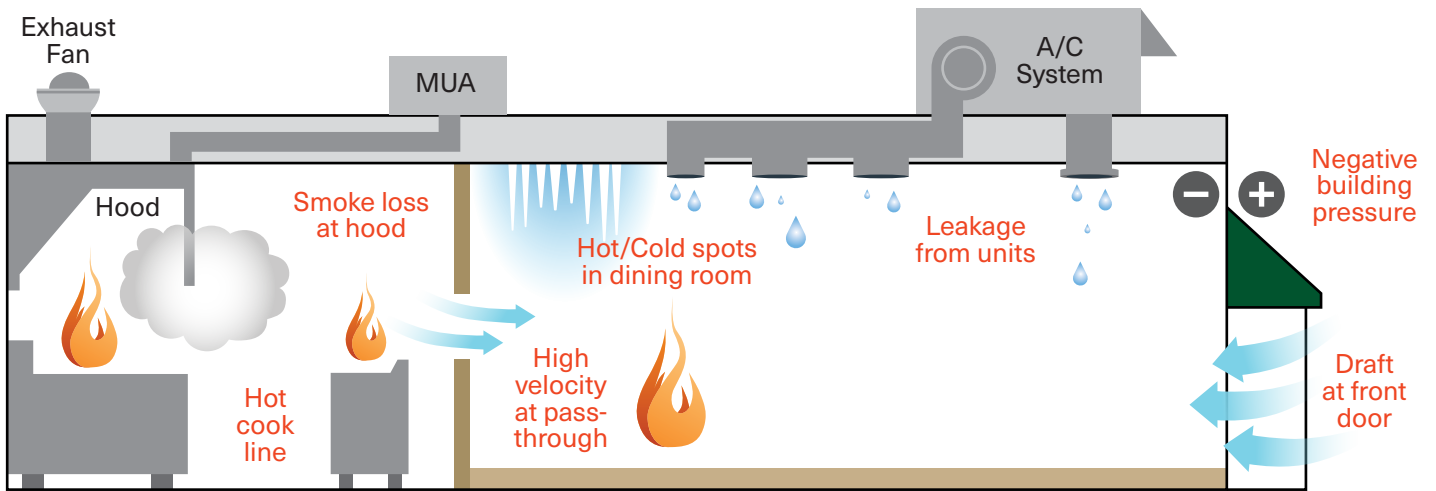
Typical make-up air units can introduce high humidity into cooking and dining areas causing damage to walls, ceilings, floors and equipment. The Trane TOAU minimizes the moisture and the associated problems by treating the air and dehumidifying it when needed.

Seamless compatibility with Trane controllers, building automation systems and software

Exhaust hoods, TOA Units, related HVAC equipment and control systems are interconnected to create Trane Integrated Comfort Systems, which are sophisticated yet simple to operate. Factory commissioning means less field labor, faster installation, single-source responsibility and accurate daily operation. This reduces operating and service issues related to compatibility, programming and maintenance.



Unbalanced systems can lead to unpleasant problems

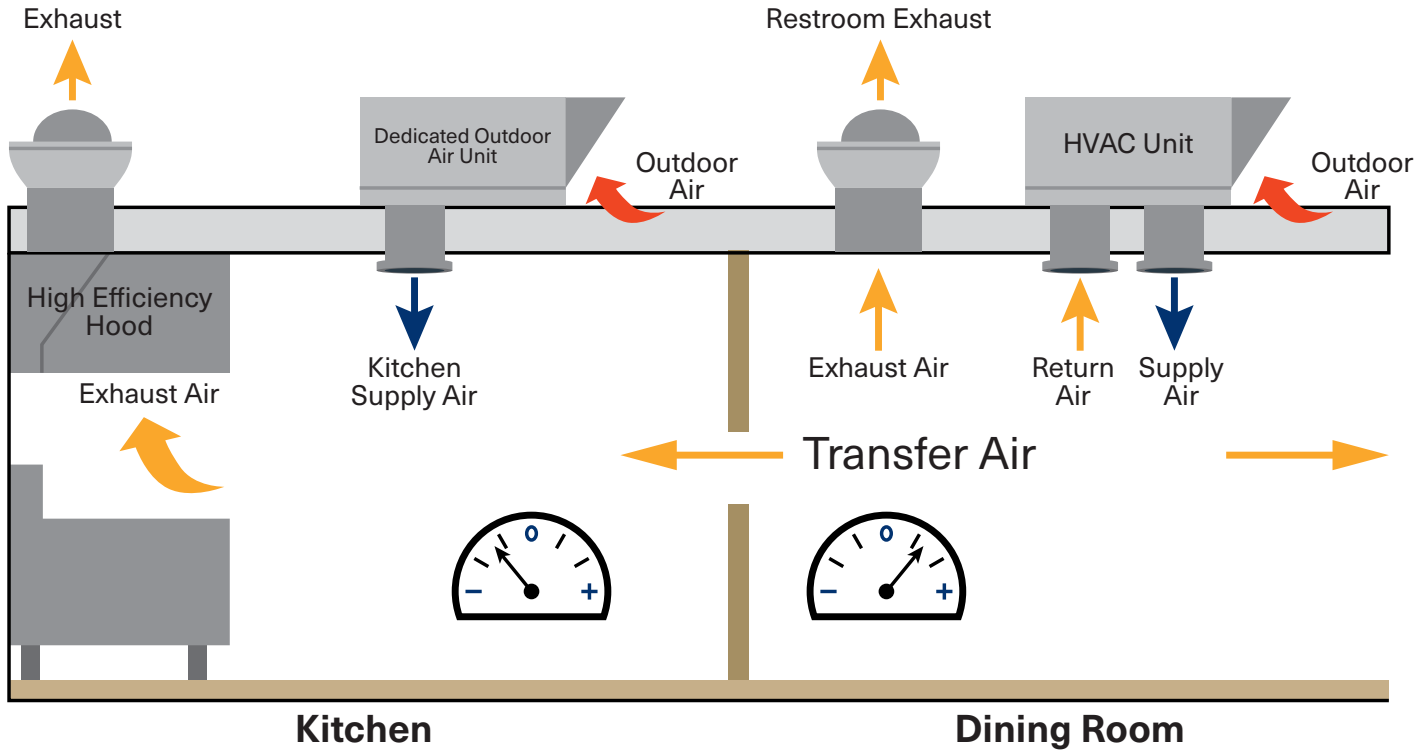


In this illustration we see the results of a poorly designed and improperly balanced restaurant HVAC system. Negative pressure in the dining area causes outside air to flow in through the front door, causing drafts and cold or hot spots. Air also flows in from the kitchen, bringing in odors, smoke and heat.

Because make-up air is not properly conditioned, humidity is poorly controlled, allowing moisture to form on vents, windows, trim, walls, equipment and elsewhere. The result can be expensive moisture damage to facilities and equipment.

Most importantly, if customers are uncomfortable they are less likely to return, and uncomfortable employees are less likely to stay.

Trane TOAU innovation creates balance



Here we see a properly balanced HVAC system, which uses an innovative Total Kitchen HVAC® design and includes a Trane TOAU. Make-up air units are not needed with this system. Positive pressure in the dining area keeps poor quality air out. Humidity and temperature are maintained at optimal levels. Energy costs are reduced. Guests and employees are more comfortable.

Quick Comparison...

Traditional System with Make-Up Air Unit (MAU)

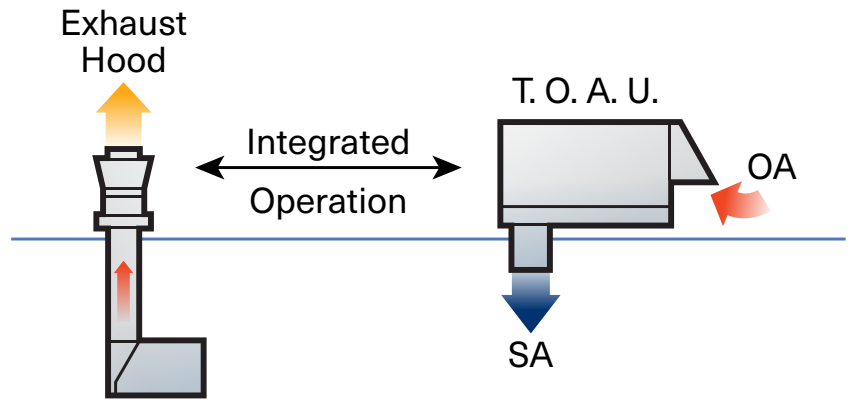
- Discomfort caused by introducing un-cooled make-up air in or around kitchen hoods
- Energy wasted when make-up air units and other HVAC units “fight” to maintain proper conditions
- Poor hood function due to competing airflows
- Complicated and inefficient system air balancing
- Complicated HVAC and make-up air ductwork

Advanced System with Total Outdoor Air Unit (TOAU)

- All outside air is cooled, dehumidified & heated based on conditions to maximize comfort control
- Energy savings — usually 20 to 35% less energy needed
- Less humidity in conditioned air
- Eliminates system “fighting” between make-up air and HVAC systems
- Simplified building layouts, less ductwork
- A Total Kitchen HVAC® Solution

Bring it all together with the Total Kitchen HVAC System

Operation of the kitchen hoods and the TOAU are integrated so the flow of exhaust air and conditioned outside air remain in balance, even with variable exhaust hood systems. This system is applied as part of the overall HVAC system and its related controls.



Total Kitchen Heating Ventilation and Air Conditioning* (TKHVAC) is a system that uses high efficiency kitchen hoods with variable hood exhaust controls based on cooking loads. TKHVAC is integrated with Trane TOAU to replace kitchen hood exhaust with properly conditioned outside air. These measures increase restaurant energy efficiency by 20 to 35%.

The Trane TOAU makes operating decisions about when and how much to ventilate, dehumidify, cool or heat based on outdoor air conditions and exhaust demands which prevent unwanted moisture and heat from entering the kitchen.

The Trane TOAU meets all of the performance needs on a modern TKHVAC system. Like the conventional system, some of the replacement air is typically comprised of transfer air from the dining room to maintain the dining area at positive pressure.

The TOAU replaces the Make-up Air unit and the Rooftop HVAC unit used in old designs, eliminating costs associated with these units and their ductwork.

The TKHVAC approach solves many problems associated with conventional make-up air systems:

- All air delivered into the kitchen space is comfort controlled. When outdoor air conditions permit, the kitchen is controlled by ventilation only. Heating or Cooling is automatically turned on only when needed. This eliminates the comfort, temperature and humidity problems caused by traditional make-up air units.
- Simultaneous heating and cooling is eliminated with one unit responding to outdoor and indoor conditions.
- Competing airflows are eliminated since all air entering the kitchen leaves through the exhaust hoods.
- Building layouts are simplified since the rooftop MUA unit and duct system are eliminated.

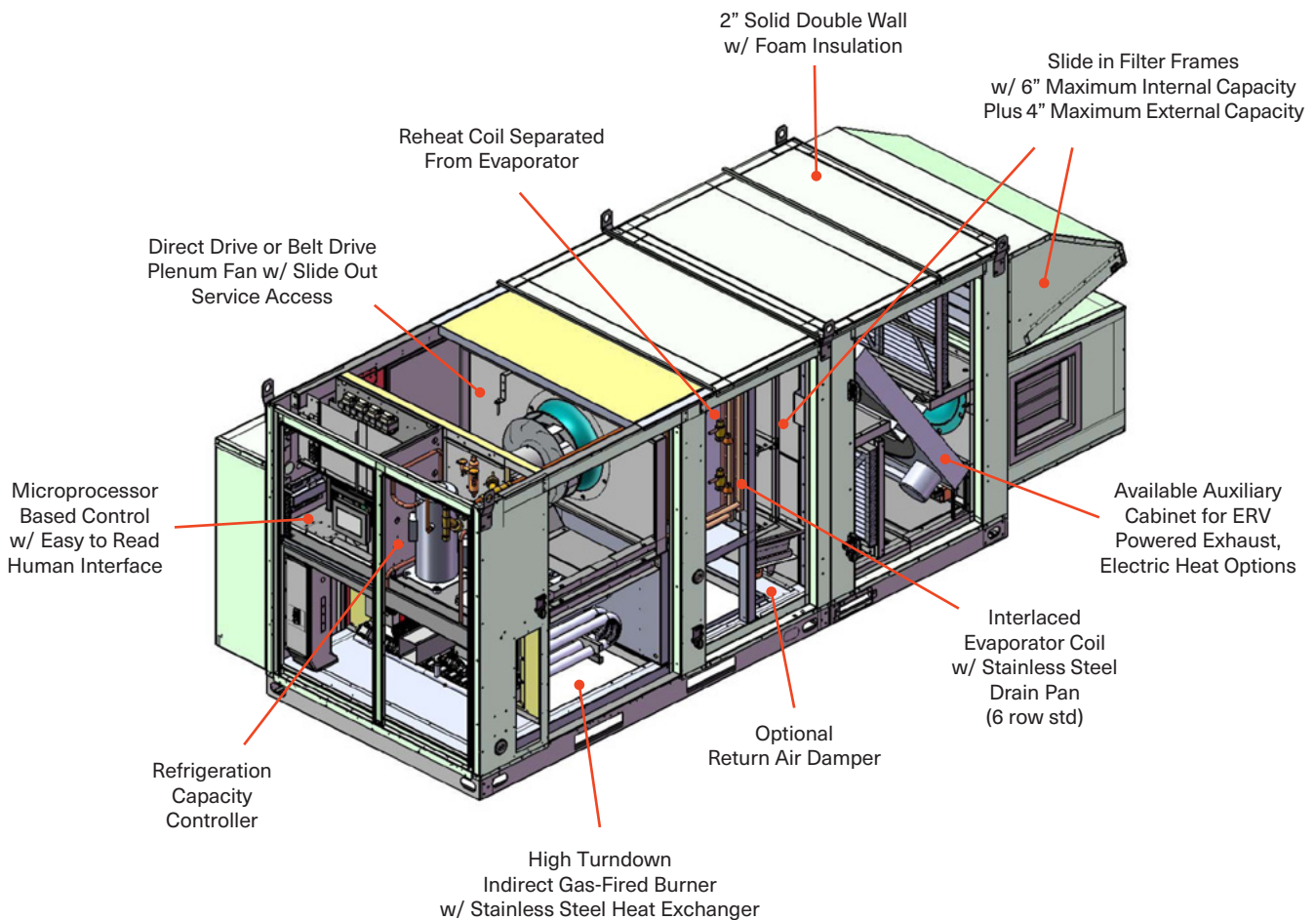
TKHVAC designs use less energy to provide better kitchen comfort. Kitchen airflow is up to 49% lower, which reduces fan energy. Lower airflow reduces air turbulence in the kitchen, which improves hood performance. In addition, TKHVAC systems use up to 30% less electricity when cooling and up to 30% less gas when heating than conventional kitchen HVAC/MUA systems.

Improve your business with Trane TOAU

The Trane Total Outdoor Air Unit is an integral part of your Total Kitchen HVAC Solution. See how greater comfort, lower energy costs and better moisture management can improve your business.

Available for all types of restaurants:

- Casual dining
- Quick serve
- Fine dining
- Institutional
- New and retrofit applications



Learn more at trane.com



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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