

# Halton -Total Kitchen HVAC<sup>®</sup> Solutions for the Modern Kitchen



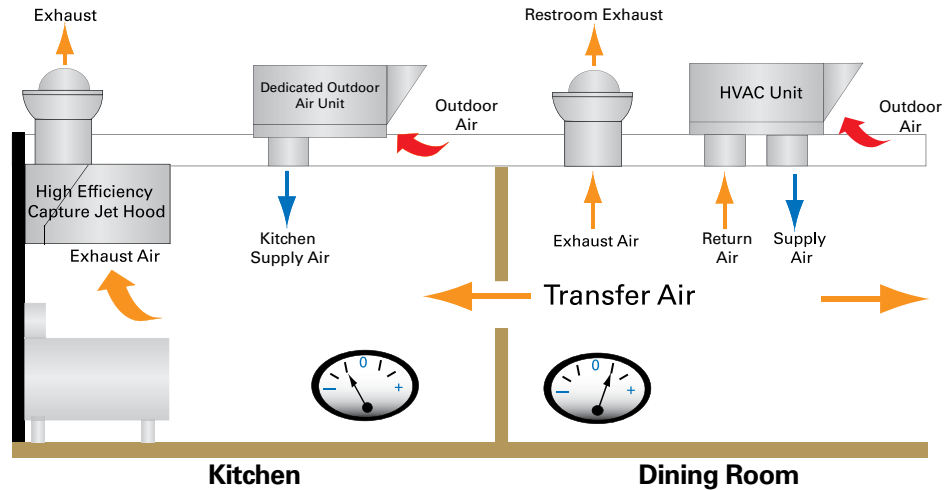


TKHVAC™ - Total Kitchen HVAC®

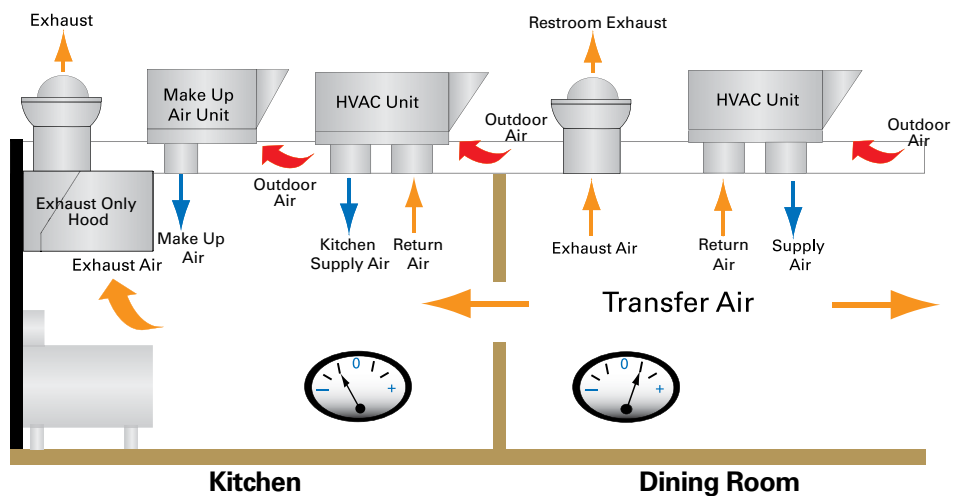
# Safety, Comfort and Energy Efficient

Halton's Total Kitchen HVAC® provides the first integrated HVAC solution designed specifically for commercial kitchens. TKHVAC™ concept eliminates miscommunication between the disciplines involved in Foodservice Facility design. Halton delivers an integrated design where ventilation is tailored for a specific cooking process, accounts for comfort and safety of kitchen employees at minimum energy costs. Halton's TKHVAC™ solution integrates Capture Jet® hood technology, which achieves total thermal capture and containment at reduced exhaust rates and saving fan energy, lowering dehumidification and cooling tonnage and reducing heating capacity. Ventilation, dehumidification, cooling and heating functions are automatically controlled through a single TKHVAC™ unit which reduces construction costs and eliminates simultaneous heating and cooling. A key TKHVAC™ benefit is moisture control. Automatic control of dehumidification functions remove excess outdoor air moisture before it enters the building protecting the safety and comfort of occupants and helps protect building components from expensive and unhealthy moisture damage. Halton's TKHVAC™ is your commercial kitchen HVAC Solution!

## Total Kitchen HVAC® (TKHVAC™) System...



## Conventional Kitchen Make-Up Air System...



Replacement Air = Transfer Air + Make-up Air (if used) + Outdoor Air from Kitchen HVAC unit (RTU)



## Common Foodservice HVAC Issues

### Heating Season

- Temperature Swings & Drafts due to “Off-Cycling” & Low Mixed Air Temperatures (Supply Air Tempering)
- Rapid-Cycling & Fast Moving Zones – Overshoot
- Hood Capture & Containment Problems – “Roll-Out” due to Cold Air Introduction In & Around Exhaust Hoods

### Cooling Season

- Uncontrolled Zone Conditions due to “Outdoor” Air Introduction (High Humidity)
- Cold & Clammy Zone Conditions (72°F @ > 75% RH)
- Mold, Mildew & Bacterial Growth (>65% RH)
- Wallpaper Trim & Molding, Dry Wall & Ceiling Tile Damage

## Popular Misconception vs. TKHVAC™ Reality

Capital cost increases significantly when air conditioning all the outside air.

***TKHVAC™ when coupled with High Efficiency Capture Jet® hoods are cost neutral in the vast majority of applications.***

Operating costs are lower with a combination of untreated make up air and air conditioning.

***kWh usage is actually higher in a conventional system since the A/C unit has to handle unintended loads generated by un-tempered make up air regardless of delivery method. TKHVAC™ reduces airflow and will require fewer or smaller blower motors.***

Un-tempered outside air has no impact on room humidity and temperature levels since it is supplied adjacent to the hood and is immediately exhausted.

***When air is supplied outside the hood envelope, it will mix with the air in the kitchen thus affecting its temperature and humidity. MUA drives space temperature and humidity.***

***Moisture travels independently of the air flow and will migrate quickly throughout the space.***

# Total Kitchen HVAC® (TKHVAC™)



Reduces energy consumption and reduces greenhouse gases.



Virtually eliminates costs associated with moisture and mold damage.



Improves comfort through temperature and humidity control.



Heat load based design method with energy modeling.



No longer "chasing the load" with system designed without accounting for unanticipated loads.



Overall exhaust rates reduced with High Efficiency Capture Jet® hoods allowing for reduced tonnage of integrated DOAR (Direct Outdoor Air Return).



## High Performance Restaurant HVAC.... Solutions & Methodology

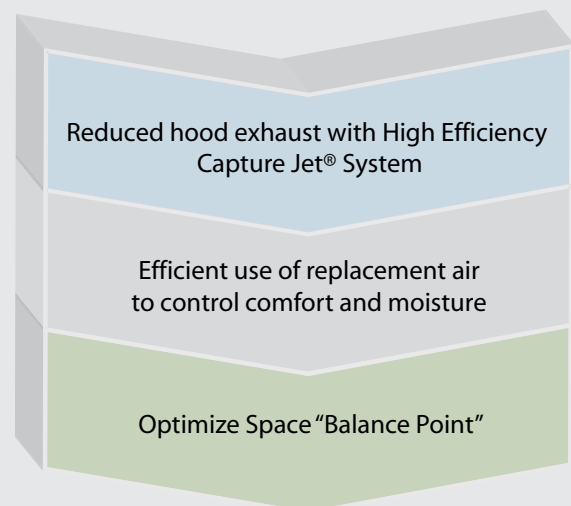
### Reduced Hood Exhaust with High Efficiency Capture Jet® System

#### Halton Capture Jet® technologies

With Capture Jet® technologies Halton foodservice delivers all the benefits of good indoor air to your foodservice business. We developed Capture Jet® specifically to improve foodservice environments while reducing operational costs. Capture Jet's efficiency is based on our unique technology that reduces the effective net exhaust volumes while improving extraction efficiency with minimized fan and ductwork sizing. Its clean operation also reduces maintenance time. These features contribute to lower operational and servicing costs than with traditional systems, and have greater energy savings for faster payback. In addition to being environmentally friendly, the cleaner ductwork improves fire safety.

#### Halton Capture Jet® hoods

Halton Capture Jet® hoods prevent the heat and impurities produced by the cooking process from spreading to the work area. The hoods deliver a low volume, high velocity perimeter air jet - the Capture Jet® - that pushes the uprising thermal current to the filters. Compared to conventional exhaust-only canopies, Capture Jet® is more efficient, reducing energy consumption by 30% or more due to its reduced air flow rates while providing full capture



and containment of the convective plume and effluent. Direct savings are realized in both operating and initial costs. Capture Jet® hoods also include the unique mechanical KSA grease extractor, which removes between 70% to 98% of grease particles of 5 and 15 microns in diameter per ASTM F2519. Increased grease extraction reduces hood and duct maintenance in addition to the smaller static pressure loss design. The KSA extractors are stainless steel and easy to clean. Hoods also include a T.A.B. (Testing & Balancing) port system for easy system testing and balancing.

## DOAR Operating MODES

1. Ventilation
2. Cooling (Modulating)
3. Dehumidification (Two-Stage Modulating)
4. Heating (Modulating – High Turndown)

Mode control based on outdoor air conditions with optional space sensing.

## Optimize Space “Balance Point”

4 different outdoor air operating modes (Ventilation, Dehumidification, Cooling or Heating).

Prevents simultaneous heating, cooling and space temperature overshoot.

Automatically adjusts supply air temperature to take advantage of space gain thus maintaining “Balance Point” with minimum heat input.

# Total Kitchen HVAC<sup>®</sup> Solutions

## Integration

Integration of Capture Jet<sup>®</sup> hood technology and TKHVAC<sup>™</sup> unit

- Halton’s Hood Engineering Layout Program (HELP) is the foundation for heat load based design integrating Capture Jet<sup>®</sup> selection with Air Conditioning load data.
- Reduce airflows and save energy and reduce greenhouse gases.
- Eliminate drafts to improve comfort and optimize hood performance.
- High turndown heating systems eliminate cycling and help minimize temperature variations.

## Moisture Control

TKHVAC<sup>™</sup> units provide automatic control outdoor air moisture and temperature

- Excellent zone control.
- Control moisture (<65%) to improve occupant comfort and safety eliminate clammy conditions.
- Help protect building components from costly and unhealthy moisture damage.

## Save Energy

TKHVAC<sup>™</sup> has been demonstrated to control comfort, control moisture and use less energy than conventional HVAC/MUA systems.

## Cost Effective Solution

Halton’s TKHVAC<sup>™</sup> has proven it can be a cost-neutral commercial kitchen HVAC solution!



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