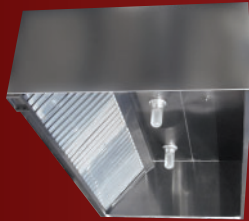




**Dedicated Outdoor  
Air Units**



**Exhaust Fans**



**Kitchen Hoods**



**Fire Suppression**



**Electrical Controls**

**LC**SYSTEMS  
Manufacturers of  
Total Kitchen HVAC™ Systems

## TESTIMONIAL

“White Castle Systems has worked with LCSysms for the past four years on implementation of their Total Kitchen HVAC™. We currently have several Total Kitchen HVAC systems installed that have operated for up to four years. In all of our Total Kitchen HVAC installations, we have experienced better control of kitchen and restaurant comfort, including much desired humidity control and lower energy costs than we had experienced in previous years utilizing other HVAC and hood systems.”

**Jeff Lynch**

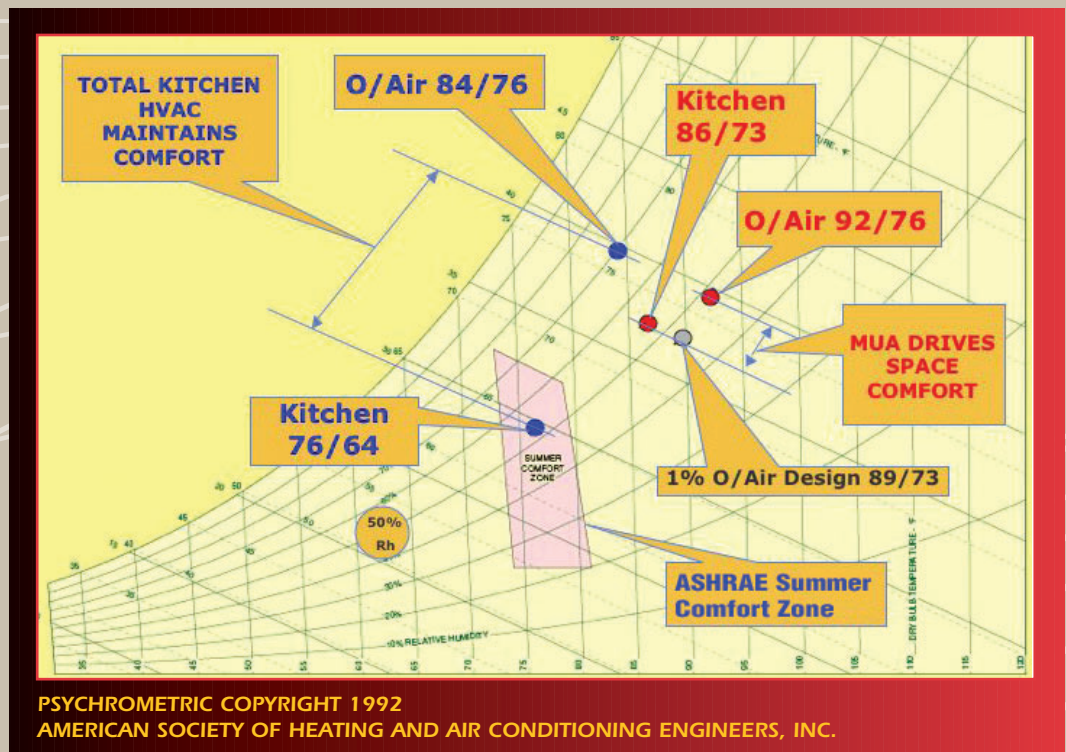
*Engineer*

*White Castle Restaurants*

## TOTAL KITCHEN HVAC™

### A New Solution for Commercial Kitchens that Saves Energy and Delivers Unparalleled Comfort.

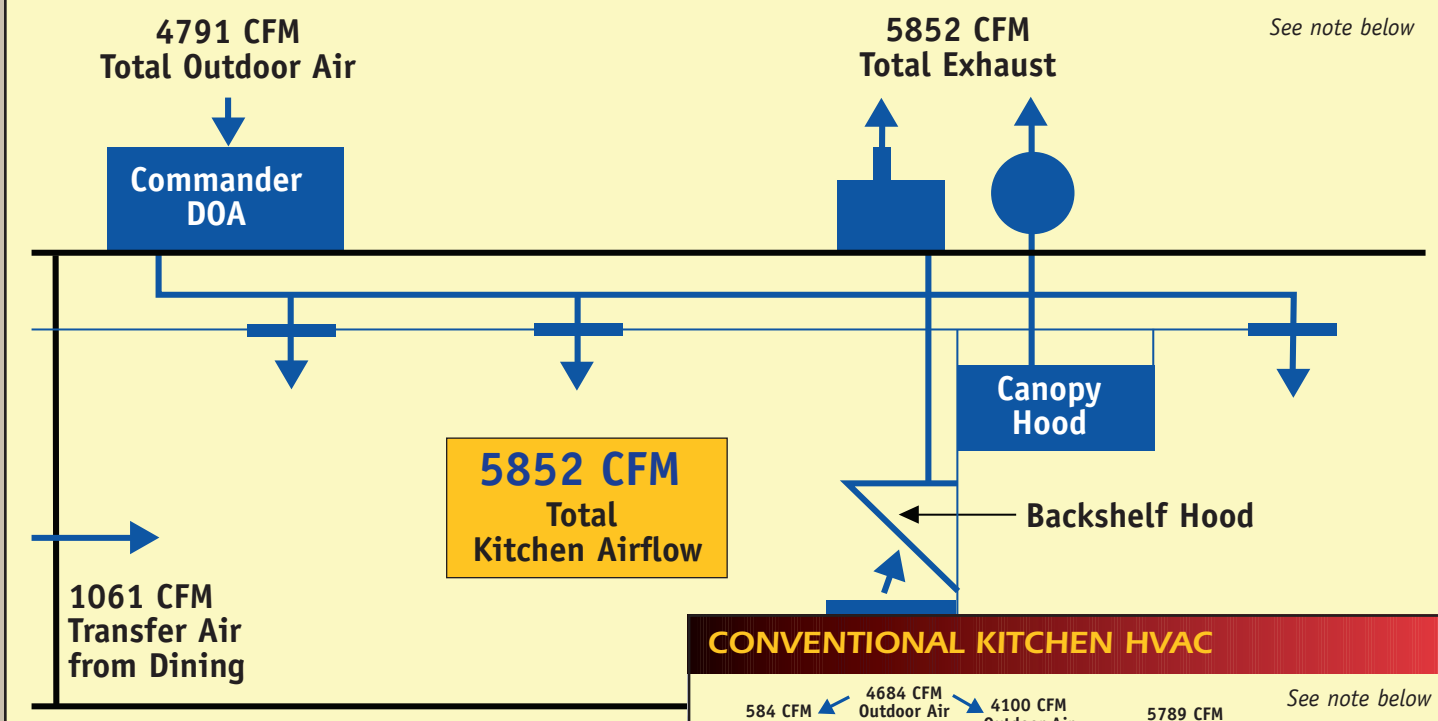
Webster's defines "total" as, "...concentrating and employing all resources on a single objective." Total Kitchen HVAC concentrates all kitchen comfort and ventilation resources on one objective — Kitchen HVAC that delivers optimum hood performance, improves kitchen comfort and lowers HVAC energy costs. A two-year, on-site survey conducted for a national restaurant account proved Total Kitchen HVAC met its objective. The survey compared conventional kitchen HVAC with separate makeup air to Total Kitchen HVAC. Total Kitchen HVAC improved comfort in all seasons and dramatically improved moisture control. The collected energy data proved that, on average, Total Kitchen HVAC heating costs were 25% lower and cooling costs 37% lower than the conventional kitchen HVAC with MUA, data showed. The aforementioned comfort is demonstrated in the psychrometric example below. The example plots conditions from the survey with outdoor air above the ASHRAE 1% design for these locations. As the example shows, makeup air drives the conventional kitchen outside the ASHRAE comfort zone while Total Kitchen HVAC maintains the kitchen comfort within the zone.



## TOTAL KITCHEN HVAC™ IS PERFECT FOR:

- Restaurants
- Schools
- Hospitals
- Correctional Facilities
- Senior Care Communities
- New or Retrofit Installations

## REVOLUTIONARY TOTAL KITCHEN HVAC™



### Total Kitchen HVAC™ Saves Energy - Improves Comfort - Simplifies Kitchen Airflow

-Commander Dedicated Outdoor Air Unit (DOA) integrates functions of separate kitchen heat cool (RTU) and makeup air (MUA) units into a single unit.

### HEATING

#### 100% Thermally Efficient Direct Gas-Fired Heating System

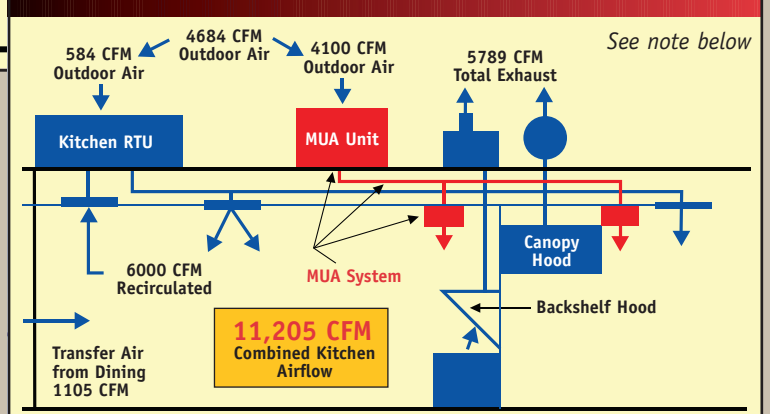
- Designed specifically for outdoor air heating
  - High burner turndown - up to 30:1
  - Even heat maintains comfort at lower supply air temperatures
- Eliminates cycling and cold zones
- Integration eliminates energy-wasting simultaneous heating and cooling
- Intelligent Controls
- Senses kitchen balance point - reduces heating to match kitchen work load
- Uses outdoor air rather than DX cooling to prevent kitchen overheating

### VENTILATION

#### Kitchen Hood Ventilates Kitchen Heat Gain

- Substantially reduces kitchen airflow (see insert above)
- Eliminates one or more supply fan motors
- Optimizes hood performance by eliminating competing airflows
- Real-world hood performance more closely matches test lab conditions
- Compatible hood designs operate at lower exhaust airflows
- Eliminates conventional MUA
- Saves construction dollars

## CONVENTIONAL KITCHEN HVAC



- Eliminates separate MUA duct system
- Open space above ceiling simplifies construction
- Eliminates MUA unit gas and electrical connections
- Eliminates MUA roof curb and roofing
- Eliminates MUA devices at hood

### AIR CONDITIONING - DEHUMIDIFICATION

#### Eliminates Excessive Moisture BEFORE it Enters the Kitchen

- Intelligent controls
  - Activate ventilation mode (no heat, no cool) when O/Air permits
  - Hood integration expands ventilation-only opportunities
- Automatically maintains comfort at lowest energy costs
  - Modulates compressor capacity to match load
- Dehumidification improves comfort and safety
  - Helps prevent mold and mildew
  - Dryer floors help prevent slip-fall accidents
- Dehumidification minimizes moisture damage
  - Dryer diffusers and duct systems
  - Dryer ceilings, walls and floors

**Note:** Drawings depict simplified illustration of actual installations involved in a two-year, on-site energy survey.

## LCSYSTEMS EQUIPMENT LINE-UP



### Commander Dedicated Outdoor Air (DOA) Units

Packaged units include intelligent controls, modulating DX cooling and direct or indirect gas-fired high-turndown heating. Capacities up to 7,500 CFM - 25-tons - 814 MBH direct-fired - 400 MBH indirect-fired.



### Exhaust Fans

Complete line of upblast power roof ventilators, centrifugal blowers, and grease management systems listed for kitchen hood exhaust per UL subject 762.



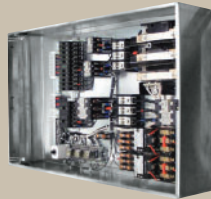
### Kitchen Hoods

Complete line of canopy and non-canopy (backshelf) hoods. Hood styles are designed to complement Total Kitchen HVAC systems.



### UL 300 Fire Suppression

UL 300 fire suppression systems are available with factory piping only, field hook-up or complete field installation with certification and permit fees.



### Electrical Controls

Standard control packages integrate system functions.

# LCSYSTEMS

*Manufacturers of Total Kitchen HVAC™ Systems*

[www.lc-systems.com](http://www.lc-systems.com)

*Distributed by:*