

**CASE STUDY APPLICATION:**

**Commercial Dining HVAC**

**PRODUCT SPOTLIGHT:**

**A Tale of Two Franchisees - DOAS vs. RTU**

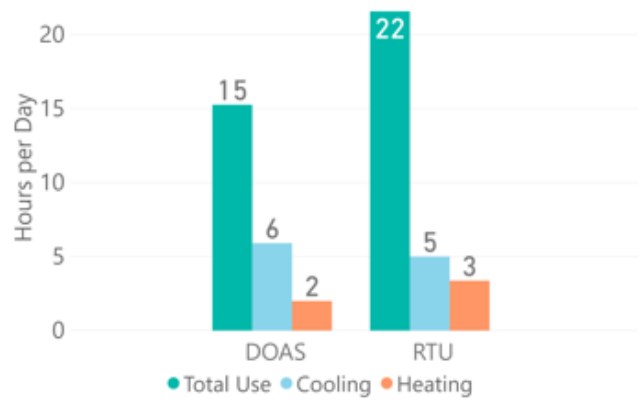
ThermoTek serves and monitors a restaurant chain with two franchisee locations in Kansas City. One of the locations, **Site A**, utilizes ThermoTek Dedicated Outdoor Air Systems (**DOAS**) to handle the HVAC demands and the other location, **Site B**, utilizes traditional On/Off rooftop units (**RTUs**). The restaurants have nearly identical building design parameters and operation patterns. ThermoTek analyzed the space condition and equipment usage data at each site to compare the off-peak performance during the transition (“shoulder”) season.

Data trends from March through May suggest DOAS as the superior solution:

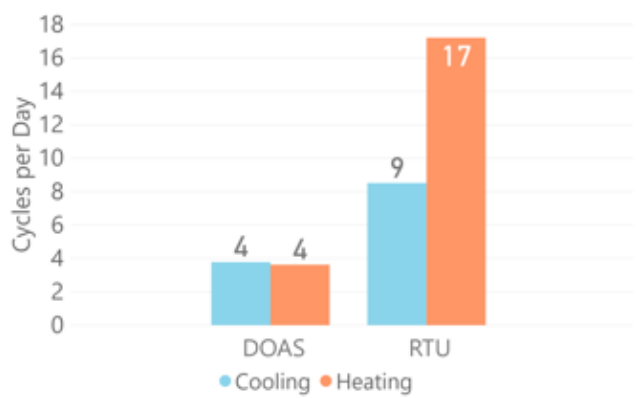
- **More precise space temperatures show improved comfort**
- **Lower overall utility costs**
  - Despite fully conditioning the kitchen’s make-up air
- **Proper runtime from superior controls and setback implementation**
  - 32% reduction by eliminating excess overnight HVAC usage
- **Less equipment cycling from full modulation extends unit lifetime**
  - 56% fewer cooling equipment cycles
  - 76% fewer heating equipment cycles
- **Reduced need to mix return air to condition outside air**
  - Met the same conditioning demands with 57% less total air movement and significantly cut blower energy demands
  - Less total air allows for downsized, reduced-cost ductwork

**CONCLUSION:**

As demonstrated by the data gathered, traditional RTUs can experience difficulties handling off-peak times of the year. This may result in excessive unit cycling, reduced equipment lifetime, and uncomfortable variations in space conditions. Given that most locations spend the majority of the time in these off-peak weather conditions, the modulating capabilities of the DOAS unit offer a vastly superior solution.



**Average Equipment Usage per Day**



**Average Equipment Cycles per Day**



**Space Temperature Ranges When Occupied**

Location	Customer Volume	Natural Gas	Electricity
Site A (DOAS)	42,425	\$856.50	\$6,059.46
Site B (RTU)	38,263	\$1,633.33	\$6,135.19
Comparison	11% Busier	48% Savings	1% Savings

**Utility Comparison of Site A to Site B**