



CASE STUDY RESTAURANTS



Rusty Pelican, Key Biscayne



The landmark South Florida restaurant located on the waters of Key Biscayne underwent a major renovation to upgrade the facility and create a world class dining experience. Along with significant structural and design improvements, the facility upgraded its HVAC system to include Advantix equipment, the optimal solution for handling the environment's high humidity load.

CHALLENGE

The restaurant initially used conventional rooftop units to cool and dehumidify the space which proved insufficient and expensive. The extreme heat and humidity of South Florida (92°F, 120gr/lb in the peak of summer) made it difficult for the HVAC system to manage the high humidity load, resulting in customer discomfort (overcooled air), high energy bills, and poor air quality.

In addition, the large amount of makeup air required for the kitchen made the restaurant negatively-pressured compared to the outside and brought Florida's humidity inside the restaurant, causing a wide range of issues including damage to furnishings and musty odors.

As part of the renovation, Rusty Pelican's owners, Specialty Restaurant Corporation, demanded the new HVAC design guarantee excellent air quality for patrons and staff without using an excessive amount of energy. Even on the most humid summer days, outside air has to be delivered to the space at the following conditions:

- Temperature: 78°F
- Humidity: 50% RH (76 gr/lb)

SOLUTION

As a more cost-effective solution, the restaurant owners chose to install two Advantix Systems' DT Large units that use salt water to dry, cool and clean the air. This groundbreaking, liquid desiccant technology uses lithium chloride to naturally remove humidity from the air, reducing energy consumption by 20-40% compared to alternative solutions. Without the need of overcooling the air to remove moisture, Advantix units deliver excellent air quality to the facility with less operating costs and lower maintenance. The systems also work as a natural disinfectant, eliminating germs by scrubbing the air and eliminating condensation points such as drip pans and condensate lines.

"Humidity control is an increasingly important priority among restaurant managers. It made sense to integrate a more efficient and sustainable system like the Advantix Systems unit as part of the retrofit and we're pleased that the results have been so well received by the Rusty Pelican and its customers, too."

Raul Mastrapa, Lead Engineer, Ross & Baruzzini



Rusty Pelican: Side by Side Comparative Analysis - Conventional Vapor Compression Vs Advantix Systems

Conventional Vapor Compression Systems treating total of 6,800 CFM 100% OA with Nominal Capacity of 20.0 Tons each											Advantix Systems Solution 2 x DT-Large treating 6,800 CFM 100% OA treating total of 6,800 CFM 100% OA with Nominal Capacity of 20.0 Tons each									
2 x OA Units Operating - Occupied Mode (10:00 am - 10:00 pm)											2 x OA Units Operating - Occupied Mode (10:00 am - 10:00 pm)									
Bin Bucket	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Electrical Usage	68.4	76.3	68.8	63.4	52.1	39.1	24.9	8.9	3.6	3.6	28.2	28.2	28.2	25.3	23.9	22.5	22.5	21.1	6.0	6.0
Opp. Hr/yr	35	30	33	578	1,375	1,276	682	195	122	54	35	30	33	578	1,375	1,276	682	195	122	54
kw/yr	2,392	2,288	2,203	2,203	71,683	49,932	17,002	1,731	439	194	986	845	929	14,649	32,912	28,746	15,364	4,118	732	324
1 x OA Unit Operating - Unoccupied Mode (10:00 pm - 10:00 am)											1 x OA Unit Operating - Unoccupied Mode (10:00 pm - 10:00 am)									
Bin Bucket	1	2	3	4	5	6	7				1	2	3	4	5	6	7			
Electrical Usage	33.1	29.3	24.1	16.3	10.4	3.7	1.8				14.1	14.1	13.4	12.7	12.0	12.0	3.0			
Opp. Hr/yr	56	789	1,425	1,027	442	291	350				56	789	1,425	1,027	442	291	350			
kw/yr	1,856	23,143	34,305	16,736	4,576	1,087	630				788	11,109	19,061	13,014	5,290	3,483	1,050			

OA conditions 1 & 2 represent ASHRAE peak cooling for dehumidification design points.
Assumed electrical cost per kwh: \$0.11

43% Savings
ANNUAL SAVINGS:
\$12,479/year

Hibachi-style restaurant, Florida

One of the most challenging configurations for air conditioning systems in hot, humid climates is hibachi-style restaurants. With hot, steamy cooking at every table, the A/C must exhaust a lot of air from the dining room and then provide treated makeup air directly back into the space. In humid climates, this requirement is particularly challenging since makeup air can add excessive moisture back into the space if not properly treated, causing condensation issues, customer discomfort, and musty odors. To better meet these challenging conditions, a hibachi restaurant in South Florida installed Advantix equipment to remove moisture from the air, reducing the load on the chiller and eliminating all humidity issues inside the restaurant.



CHALLENGE

A hibachi-style restaurant in South Florida struggled to handle the humidity load inside the dining area. Multiple exhaust fans throughout the restaurant removed the heat and humidity from the grills, requiring properly treated makeup air to rebalance the space. South Florida's extremely humid conditions resulted in challenging conditions for the chiller and ideal conditions were not always met. On many days, the humidity load within the restaurant became too high, causing condensation to form and drip from the ceiling grills and a musty odor to permeate in the space.

OUTSIDE AIR CONDITIONS	REQUIRED CONDITIONS OF TREATED OUTSIDE AIR
92°F	75°F
53% R.H. (120 gr/lb)	50% R.H. (65 gr/lb)

SOLUTION

To reduce the humidity load in the space and take a load off the chiller, the restaurant installed three Advantix Systems DT Large units to treat a mix of outside and return air. Using liquid desiccant technology, the DT units dry, cool and clean the air with a natural brine solution. Because there is no need to overcool the air to remove humidity, customers are comfortable in the restaurant and there are no condensation issues during even the most humid months. With the Advantix equipment removing humidity from the restaurant, the chiller temperature can be raised from 44°F to 50°F and the inside temperature from 72°F to 76°F while providing the same level of comfort, reducing energy use, and providing a more pleasant dining experience.

