TODAY'S A/C
& REFRIGERATION NEWS

Pet Care Facility Uses Cutting-Edge Air Purification to Cuts Odors, Energy and HVAC Maintenance Costs

New Berlin, Wis.--Animal odors are inherent challenges in any pet business, however the pet care facility, Spa Paw and Tail is using state-of-the-art HVAC air purification technology to control odors, reduce energy bills and prevent any potential infectious airborne animal diseases.

This facility is a 10,000-square-foot facility, which accommodates up to 125 dogs and cats in individual luxury 3 x 5-foot to 6 x 8-foot guest rooms complete with glass doors and beds, strategically incorporates cutting-edge odor control in its entrance area's unique guest check-in, grooming and gift shop areas. "The sense of smell influences a customer's first impression upon entering a pet business" said Nina Race, president of Spa Paw and Tail. "Bad odors give the impression an establishment isn't clean, even though it might be spotless from a sanitation standpoint."

Consequently, odor control is part of Race's comprehensive attention to detail that helped put Spa Paw and Tail on local WISN-TV's Business A-List the last four years. The five-year-old business has also won a Milwaukee Magazine Reader's Choice Award in the "Pet Establishment Category," and was named the 2013 Business of the Year by the New Berlin Chamber of Commerce. "Since installing the air purification equipment in our HVAC (heating, ventilation, air conditioning) equipment, greeting and gift shop odors have been eliminated," Race said.

Race's first attempt to curb odor by introducing more outdoor air through the HVAC systems was successful, but too costly in energy. Typically economizers, which are adjustable outdoor air openings inside HVAC systems, are calibrated based on American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62 "Ventilation for Acceptable Indoor Air Quality." The standard's criteria is adopted by most commercial building operation codes for indoor air quality (IAQ). It mandates a minimum 10 to 15-percent outdoor air must be mixed with the remaining 80 to 85-percent energy-rich indoor air re-circulated by the HVAC systems.

Conversely, adjustments to the rooftop HVAC systems' economizers allowed 100-percent outdoor air for the purpose of diluting indoor air odors and contaminants. Unfortunately, the strategy also skyrocketed energy costs by 200 to 300-percent, because it required extensive outdoor air heating and cooling in the winter and summer, respectively. It was also strongly discouraged by Race's mechanical service contractor, Joe Petkus, president of Action Heating and Cooling, Milwaukee, because the technique prematurely corrodes HVAC system coils.

The 45-year-old Action Heating, suggested cutting the facility's exorbitant energy bills by installing air purification devices on the HVAC coils. Instead of 100-percent outdoor air that must be expensively heated, cooled and/or humidified, the addition of air purification devices allows for a return to the conventional outdoor air proportion of 15-percent. Meanwhile, the air purifiers eliminate odors and contaminants as the indoor air is re-circulated through the HVAC systems.

Petkus installed eight APCO air purification systems by UV manufacturer, Fresh-Aire UV, Jupiter, Fla., on each of four 7.5-ton rooftop HVAC systems manufactured by Carrier Corp. A to Z Sales, Downers Grove, Ill., assisted Petkus with the air purification sizing and coil coverage calculations.

The APCO system, an "IAQ Category" International Innovation Award winner at the 2011 Air Conditioning, Heating & Refrigeration (AHR) Expo, combines ultraviolet (UV) light and gas-phase carbon media/photocatalytic oxidation (PCO) technologies to remove microbial and volatile organic compound (VOC) contaminants, respectively.

The gas-phase portion uses activated carbon-based media to adsorb and hold VOCs, such as animal odors, through a chemi-sorption process. The PCO process converts the adsorbed contaminants into harmless carbon dioxide (CO2) and water vapor (H2O) through a chemical reaction caused by UV light shining on the titanium dioxide-infused carbon media.

The air purification systems handle more than VOC odors however. Aside from activating the PCO process, the UV light also kills all types of airborne microbes as they re-circulate through the HVAC system. For example, healthcare facilities use UV systems to kill airborne infectious diseases such as tuberculosis, influenza and pneumonia. Therefore any common canine infections, such as kennel cough or "infectious tracheo-bronchitis," are also killed by the UV light irradiation. "We've never had health issues at our facility, but the incorporation of UV as an infection deterrent is a nice back-up," said Race.

An additional benefit is maintenance savings. The dark, moist environments inside HVAC equipment is an ideal breeding ground for microbes. UV lights help eliminate mold and subsequent dirt accumulations that now require considerably less coil cleaning time during semi-annual service calls. The maintenance of the air purification systems themselves involves only UV lamp replacement every two years.

While the entrance area's odors are gone, air purification in the 5,500-square-foot guest room and indoor pet play area isn't completely void of pet odors yet, although it's much more bearable than before, according to Race. Even though it's cleaned and sanitized twice daily, the area has a continual source of odors from newly-arrived guests awaiting washing and grooming. Furthermore, Petkus said the former warehouse's basic supply and return ductwork layout isn't ideal for the number of room air changes and ventilation distribution needed to utilize the air purification systems' full capabilities.

The result of meticulous sanitation routines and the incorporation of air purification at this "pet hotel" results in an IAQ that's better than some human hotels.