

Circul-Aire's Energy Recovery and Air Purification, a "designer indoor air" Solution



Reno and Tahoe, Nevada are prime vacation locations because of their scenic mountains and gambling attractions. The increase in tourism, however, has placed a greater load on the regional Reno/Tahoe Airport that serves the surrounding area. But despite the quaintness of this mountain resort area, the airport's location in a valley-like surrounding has attributed to many problems with air quality because fumes from planes and ground-support equipment are slow to dissipate.

Like all public buildings, the Reno/Tahoe Airport Authority is required to supply proper outside air ventilation as outlined in the ASHRAE 62-1999 ventilation standard. Unfortunately, airport applications present a unique and immediate concern because airport structures routinely contend with many internal and external contaminants associated with both jet and ground access vehicle emissions.

The result is that outside air is generally of a poor quality, thereby when introduced into the building will create more problems than it is set to correct.

One alternative for the Reno/Tahoe Airport Authority was to filter outdoor air as it entered the terminal buildings to remove both gaseous and particulate pollutants. Circul-Aire worked through Conservation Mechanical and Air Inc. with Dinter Engineering Inc. to provide the final solution with a gas-phase filtration unit manufactured by Circul-Aire. A Circul-Aire TMP series filtration system was designed to combine gas-phase filtration media with air-to-air energy recovery while providing 100% clean outdoor air.

TMP-15000 unit being hoisted onto rooftop



Gas-phase filtration is unique compared to particulate-only filtration because it removes pollutants through a chemical means via adsorption and chemisorption. Where absorption involves one substance becoming chemically part of another, adsorption is the process by which one substance is attracted to and held to another. This process removes a wider range of contaminants like nitrogen and sulfur oxides, hydrocarbons, ozone, particulates, sulfides, lead and other metals, halogen compounds and odorants.

For the contaminant control strategy, Circul-Aire's MM-1355 chemical media was recommended. The MM-1355 is a tailored media consisting of 50% activated carbon and 50% potassium permanganate. In addition, high-efficiency particulate filters rated at 90% efficiency were installed to remove airborne particles. The MM-1355 is periodically tested by Circul-Aire laboratories for effectiveness and replaced when fully saturated.

Circul-Aire's TMP series utilized for the Reno/Tahoe Airport was designed to handle up to 30,000 CFM of outside air. To reduce cooling costs, a plate-type energy recovery system was added to provide maximum pre-cooling or pre-heating. This air-to-air system takes advantage of the cooler exhausted air to lower the sensible heat load placed on the airport terminal's HVAC system.

As the volume of air travel increases over the next decade, most if not all airports will incorporate gas-phase filtration equipment such as the one used at Reno/Tahoe as an effective means of ensuring acceptable indoor air quality. The success of Circul-Aire's combination gas-phase filtration and energy recovery technology has proven effective at Reno/Tahoe and other airports, including San Francisco International Airport, George Bush Intercontinental Airport in Houston and Dulles International Airport in Washington, D.C.

TECH-CHEK™ Service for Maintenance Monitoring

The maintenance of the Air Purification Systems has also been simplified with the TECH-CHEK™ Service supplied by Circul-Aire. With this exclusive service, media samples are tested in order to verify consumption rates.

This lifetime service is monitored by a computerized program from Circul-Aire that indicates the appropriate schedule for media replacement.

This customized service, supplied at no additional charge, not only provides a precise maintenance schedule, but also ensures the highest performance of the Air Purification Systems installed at the Reno/Tahoe Airport.



Circul-Aire TMP-15000 unit on airport roof



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