CIRCUL-AIRE

CASE STUDY

Air Purification - USAH System

Retrofit to Intensive Care Unit Filtration System

▲ Washoe Medical Center - Main Building

Washoe Medical Center

RENO, NEVADA - Originally built in 1862 in Reno, Nevada, the Washoe Medical Center is a 885,000 sq. ft. facility that is continuously expanding and upgrading. This hospital is the major trauma center for Northern California and Nevada, therefore it has the busiest heliport in North America.

The intensive care unit of the hospital is served by an air handling unit with a capacity of 27,000 CFM outdoor supply air.

The original design and installation of the air handling unit incorporated the following filter sequence made up exclusively of particulate filters for the outdoor supply air. A section of 70 sq. ft. of 35% and 90% bag prefilters, followed by an 80 sq. ft. section of H.E.P.A. filters. The system's outside air did not provide any means of filtering the gaseous contaminants. The administrators of Washoe Medical Center, concerned with odors generated by the fresh air supply, mandated Petty & Associates, Mechanical Engineering Consultants of Sparks, Nevada to retrofit the existing air handling unit with the required gas-phase filtration units and chemical media for the effective removal of contaminated odors generated from the outside air.

INDOOR AIR QUALITY FOR A HEALTHY AND COMFORTABLE WORKING ENVIRONMENT

Outside air does not necessarily mean fresh air. Contamination of outdoor air is not limited to large city centers. The fresh air of scenic urban Reno, Nevada can be contaminated by external sources such as helicopter jet fuel fumes and general vehicule exhaust. The problem becomes more evident when the outside air inlet of a health facility is located in the proximity of helicopter pads and/or parking lots.

GAS-PHASE FILTRATION: THE SOLUTION TO INDOOR AIR QUALITY

Gas Phase Filtration is the technology used to purify the air from all organics, inorganics and chemical contaminants present in the airstream. The principle of the Circul-Aire Universal Side Access Housing (USAH) is simple: the contaminated air passes through prefilters which retain dust and particles, and then the required MULTI-MIX® Media stages, which chemically destroy any remaining gaseous contaminants.

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The system specified by the consulting engineers for the Washoe Medical Center was a Circul-Aire Model USAH-810, rated at 27,000 CFM complete with 2'' roughing prefilters rated at 30%, followed by 6'' intermediate prefilters rated at 90%. This was followed by two separate sections of chemical media to achieve gas-phase filtration.

The first stage of gaseous filtration is achieved by Circul-Aire MULTI-MIX® MM-1000 media in MM-18 tray modules.

The second stage of the gas-phase filtration section consists of MM-18 tray module filters with Circul-Aire MULTI-MIX® MM-3000 media. The last stage of filters specified for the USAH-810 was for 2'' after-filters rated at 30%.

A differential pressure monitoring station DPMS-4 was also specified in order to measure the pressure drop across particulate filters and the entire filter section.

DESIGNED TO MEET SPACE LIMITATIONS & SERVICEABILITY

In the major trauma center of an existing hospital with various critical areas, the USAH Air Purification System had to meet very strict installation requirements.

Because of the different contaminants present, as well as required long media life, high-efficiency final filters were required. Notwithstanding the size, the unit had to be installed in the existing air handling system, within very limited dimensional constraints.

In order to maintain the supply of air to the Intensive Care Unit, the existing air handler had to continue to operate during all phases of the construction work. Therefore, very close coordination and supervision was required in all phases of engineering, production, site supervision, installation and start-up.

Due to its unique design, the only unit that could meet and surpass all specifications was the Circul-Aire USAH Air Purification System.

▲ Helicopter pad with fresh air intake

▲ Circul-Aire Model: USAH-810

TECH-CHEK™ SERVICE FOR MAINTENANCE MONITORING

The maintenance of the USAH Air Purification System 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 performance of the USAH Air Purification System installed at Washoe Medical Center.

CIRCUL-AIRE

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