

RADIAL DIFFUSERS: GENERAL

Anemostat Model HCR High Capacity Radial Diffusers now offer HVAC designers a diffuser that combines the best of both conventional "horizontal" pattern and "laminar" projection panels into one, while providing easy installation of a diffuser that does not project below the ceiling line. The resulting radial pattern now makes air distribution for clean rooms, animal rooms, hospital facilities, R&D Laboratories, and critical assembly and manufacturing areas easier to apply, without sacrificing conditions desired for those spaces.

The non-aspirating HCR Diffuser has been developed to solve the problems associated with delicate high air change applications. Capable of handling large volumes of air relative to its size, the HCR Diffuser combines rapid decay of the jet velocity with a radial pattern into the occupied zone that displaces room air with the clean supply air from the flush HCR ceiling diffuser.

Unlike non-adjustable type diffusers, the HCR Diffuser includes a unique, manually adjustable pattern control assembly that "fine tunes" the pattern based on design air flow rates, supply air cooling differentials, and application.

Applications

The intrusive radial pattern of the HCR Diffuser provides high efficiency displacement of room particulate and odors with new air in a non-recirculating manner. High ventilation rates are achieved with occupant comfort. By diffusing clean supply air from the diffuser in an outward and intrusive radial pattern, contaminants and odors are displaced, bathing critical areas in a continuous supply of clean air.

Animal Rooms

The required high air change rates, rapid odor removal, and overall cleanliness can be accomplished in high load, high density, multi-row animal rooms by locating 180° Pattern HCR Diffusers, centrally in the ceiling, over the aisle. This approach provides immediate cleansing of the aisle way and personnel, see Figure 8. The supply air displaces the air through the face of the animal racks, and replaces the air in the thermal plume rising at the rear of the racks. Exhaust air is removed from the room after it rises to the ceiling by thermal convection.

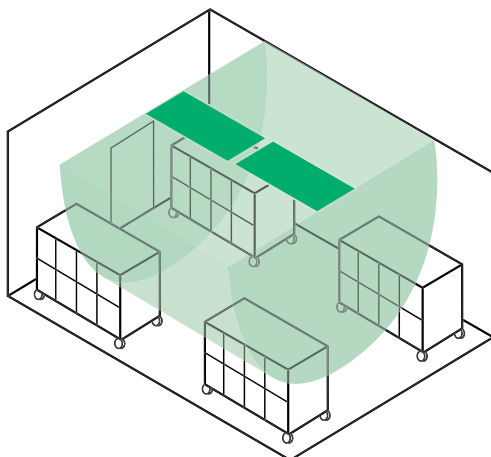
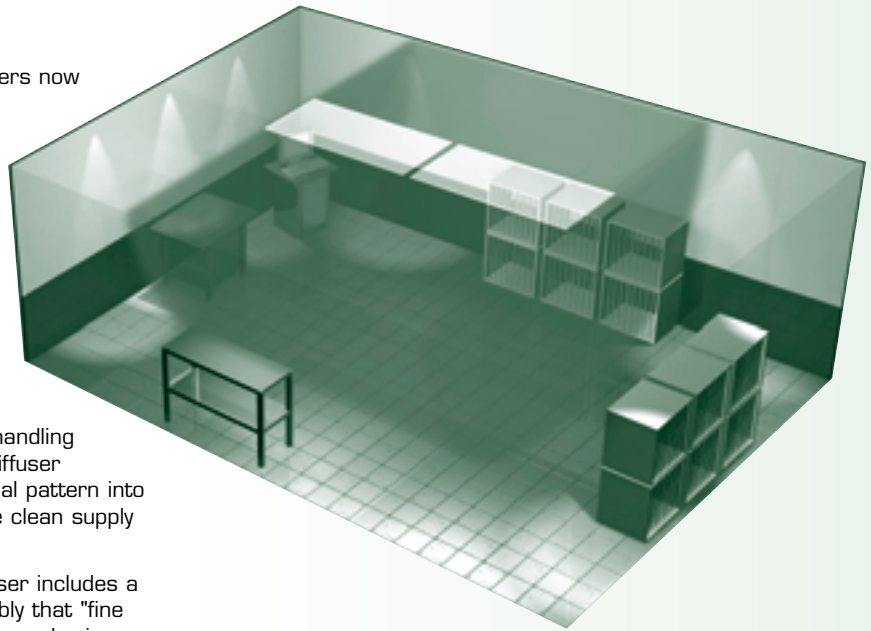


Figure 8: 180° Pattern HCR Diffusers



Smaller, single row animal rooms can be effectively bathed in clean, supply air by locating 90° Pattern HCR Diffusers, in the ceiling, near one wall, and adjacent to the aisle way, with the exhausts located low and behind the animal racks. This provides immediate cleansing of the aisle way and personnel, and allows the supply air through the face of the animal racks, towards the exhaust, for a "once through" path, see Figure 9.

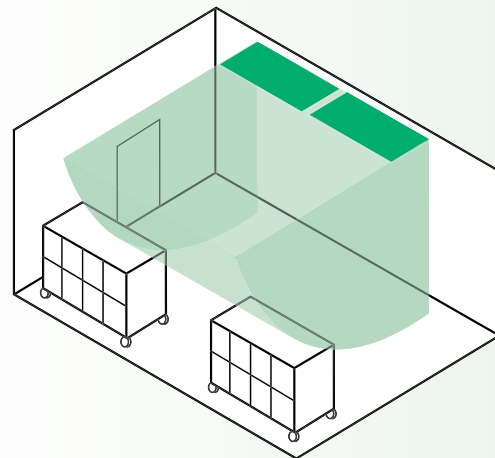


Figure 9: 90° Pattern HCR Diffusers



Clean Rooms

For these areas requiring positive particle removal and extremely high air quality, the location of the HCR supply diffusers, with respect to the extract grilles is critical. The magnitude and location of the internal load must be considered.

The supply air is ideally introduced by a "continuous run" of HCR Diffusers from wall to opposite wall to provide complete coverage of the space, minimizing undesirable secondary air motion. By introducing the air in a plug-like flow from the HCR Diffusers to the extract grilles, maximum particle displacement and removal is obtained, while cleanliness is achieved, see Figure 10.

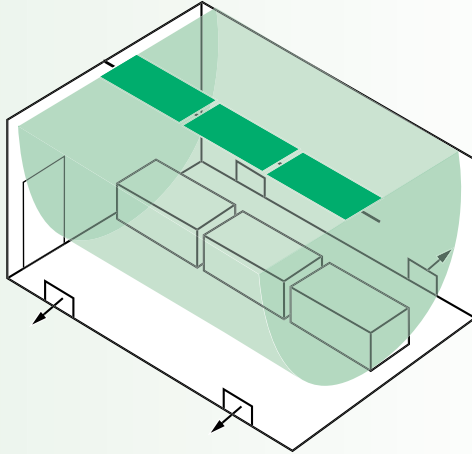


Figure 10: Continuous Run Of HCR Diffusers

The continuous run of HCR Diffusers may be located centrally in the ceiling, splitting the space into two equal zones, with extract grilles located either low in the sidewalls, or in the ceiling at the outer edges, in the forward direction of diffusion.

Alternately, 90° Pattern HCR Diffusers may be arranged in a continuous run in an upper corner of the space, with the extract located either high or low near the opposite wall. A high location is preferred with high cooling differentials and low air change rates. When high air change rates and low cooling differentials are considered, it is preferred that the extract air is removed low.

Hospitals

The HCR diffuser is a natural for use in Hospital Isolation areas, where it is preferred to "shower" the patient with HEPA filtered air, and dilute any contaminants about the patient. Raising the effective ventilation rate by reducing or eliminating dead air pockets in the room increases dilution of airborne particles, particularly when designing to prevent transmission of airborne transmitted diseases such as TB. Placing a 24" x 48" HCR directly over the bed encloses the bed in a steady stream of clean air that is best extracted low, and near the bed, see Figure 11. The adjustable pattern feature allows the vertical component to be increased or decreased to suit the local conditions.

For operating theatres, Anemostat Multi-Vent model MV-1 or MV-2 Laminar Flow Panels over the table to provide required sterile conditions, or the AORTA system are recommended.

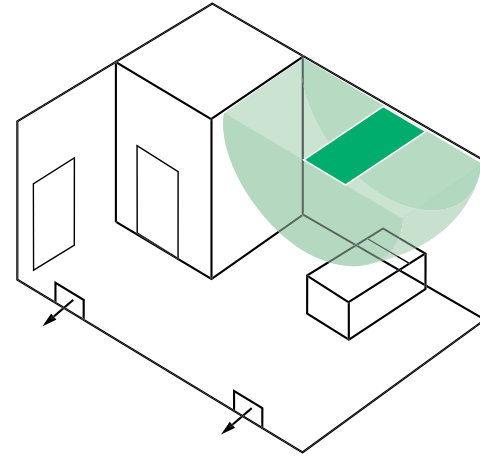


Figure 11: HCR Diffuser In Hospital Room

Laboratory & Research Facilities

The HCR diffuser provides unparalleled performance in laboratories with fume hoods. These high air change environments have the additional requirement of maintaining room velocities at levels that will not affect fume hood performance. Proper selection of sizes and discharge pattern provide diffuser arrangements that will not disturb fume hood operation while maintaining a radial pattern for effective draft free ventilation and temperature control. The adjustability of the HCR integral pattern control allows for a wide range of cooling differentials and flow rates to maintain design conditions.

Industrial & Manufacturing Facilities

The HCR diffuser is effectively used in these areas requiring one or more of the following: large amounts of ventilation air at low velocities, reduced particle flow for cleanliness, and the necessary cooling for industrial processes.

One application of HCR diffusers might consist of a continuous line of HCR diffusers over a moving line of product leaving a treating oven. With an air flow requirement as high as 200 CFM / Lineal Foot of conveyor line, the local air velocities are less than 100 FPM over the width of the conveyor line. The HCR Diffusers are aligned along the length of the product conveyor, and supplied with 14" diameter drops from a continuous duct above the diffusers.

