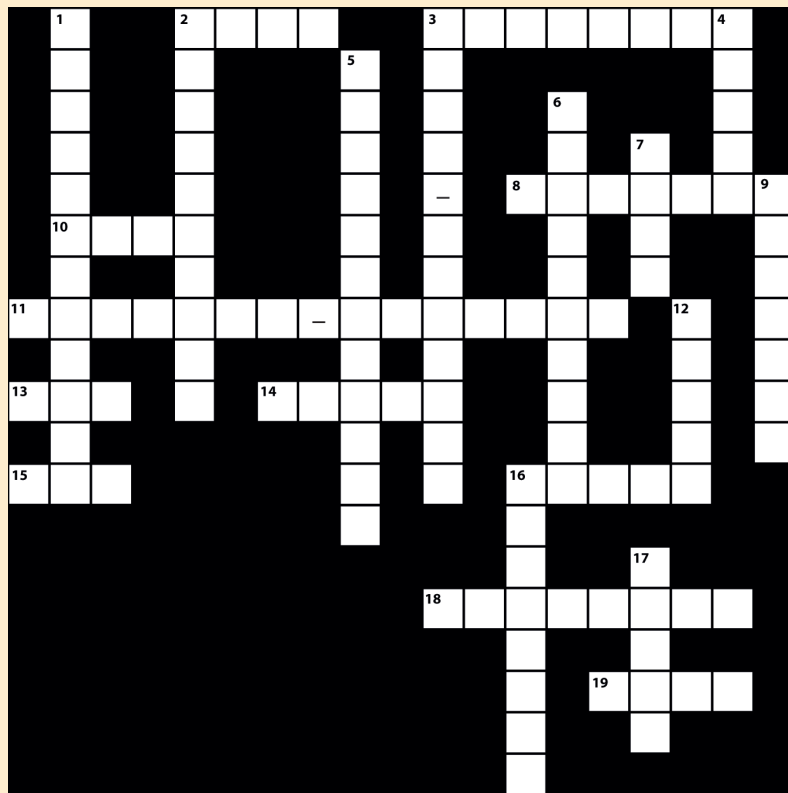


Take the HVAC CHALLENGE™

BY STEVEN G. LIESCHEIDT, P.E., CSI-CCS, CCPR

▶ Room Air Distribution



ACROSS

- This type of ceiling diffuser terminal device has a potential theoretical maximum ADPI of 85 at a room load of 80 Btuh/sq ft and at 92 Btuh/sq ft.
- This type of air outlet is usually selected when access to the ceiling plenum is restricted, and it is mounted within one foot of a ceiling and set for horizontal or slightly upward projection.
- For an occupant, this is defined in detail in ANSI/ASHRAE Standard 55.
- The percentage of points in a space where the effective draft temperature is between -3°F and $+2^{\circ}$ and the air velocity is less than 70 fpm.
- This type of air outlet uses the surface effect to transport air in the unoccupied zone.
- Most manufacturers' catalogs list the distance of this at terminal velocities of 150, 100, and 50 fpm.
- The boundary zone between a lower occupied zone with little or no recirculation flow and an upper zone with recirculation flow in a displacement ventilation system space.

- This is assumed to be linear with air temperature and increases gradually from floor to ceiling.
- The zone in displacement ventilation systems in which the location of stationary, low-activity occupants is strongly discouraged, but transient occupancy, such as in corridors, is possible.
- This is the zone in a space that is any location where occupants normally reside and may differ from project to project and should be defined by the designer.
- This rating system was originally created in response to IAQ concerns.

DOWN

- In this type of ventilation system, the space is divided into two vertical zones, with the desired space air temperature maintained only in the lower zone.
- In a mixed air distribution system, this zone begins to occur where a linear temperature gradient begins to form.
- This type of air outlet is commonly used in applications that include unit ventilators

- and fancoil units and should be selected to discharge vertically along windows, walls, and other vertical surfaces.
- In a mixed air distribution system, this zone is bounded by the floor and the throw height at which the 50 fpm terminal velocity occurs.
- This type of air distribution focuses on conditioning only part of the space for thermal comfort and/or process control.
- Manufacturers' throw data is based on this type of supply air where the jet temperature is equal to the room air temperature.
- Potential benefits of this type of air distribution system are that the air distribution ductwork may be reduced and the space service flexibility of the access floor platform is extended to include HVAC services.
- This type of displacement ventilation system uses very low discharge velocities to deliver cool supply air to the space.
- In a mixed air distribution system, this zone may exist where the volume of rising heat plumes terminate.
- This type of terminal device ceiling diffuser has a potential theoretical maximum ADPI of 76 at a room load of 80 Btuh/sq ft and 93 at 20 Btuh/sq ft.
- These types of systems have little or no thermal stratification or air in the occupied and/or process space.

To brush up on the facts behind this month's clues, refer to Chapter 56 ("Room Air Distribution") in the 2007 ASHRAE Handbook - Applications.



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