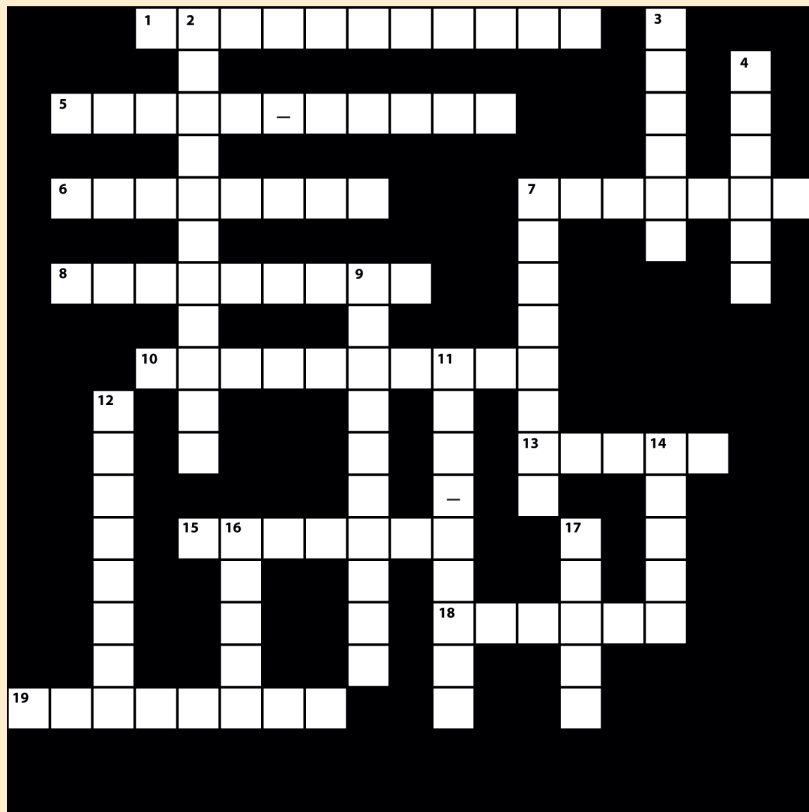




Take the HVAC CHALLENGE™

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

Evaporative Air Cooling Equipment



ACROSS

- An evaporative dehumidifier has this factor of 1.0 if it can cool and dehumidify the entering air to a wet-bulb temperature equal to the leaving water temperature.
- This type of direct evaporative cooling equipment and air washer can remove particulate and gaseous contaminants with varying degrees of effectiveness through wet scrubbing.
- Pre-heating the air entering an evaporative humidifier does not alter this ratio.
- The effect this may have on an evaporative media must be considered must be considered when deciding on the type of water treatment to use.
- Coils in open systems should have this characteristic.
- Blocks of this type of material make up the wetted surface of rigid-media direct evaporative air coolers.
- This type of valve controls the fresh water makeup that replaces evaporated water in a cooling tower.
- These may be used to prevent backlash of spray water.

- This organization publishes Standard 12, "Minimizing The Risk Of Legionellosis Associated With Building Water Systems."
- In this type of evaporative cooling secondary air removes heat from primary air using a heat exchanger.

DOWN

- These consist of a series of vertical plates that are spaced about .75 to 2 in. on centers at the exit of an air washer.
- In this type of evaporative cooling water evaporates directly into the airstream reducing the air's dry-bulb temperature and raising its humidity.
- This type of media cooler is usually designed for an evaporative pad face velocity of 100 to 250 fpm with a pressure drop of 0.1 in. of water.
- This being done continuously along with fresh water makeup is necessary to keep the concentration of minerals and contaminants in the water from rising.

- This *pneumophila* bacteria can cause Legionnaires' disease if it is inhaled into the lower respiratory system as an aerosol.
- This type of air washer is used for dehumidification when the quantity of chilled water is limited or when the water temperature is above that required for the single-stage design.
- This type of indirect evaporative air cooler includes a heat exchanger, a wetting apparatus, a secondary air fan assembly, a secondary air inlet louver, and an enclosure.
- This can be minimized by reducing the media and sump exposure to nutrient and light sources by keeping the bottom of the media out of standing water in the sump and by allowing the media to completely dry out every 24 hrs.
- This can be produced on site and injected into the water circulation system as an alternative to standard chemical biocide water treatments.
- This type of air washer consist of a chamber or casing containing nozzles, a tank for collecting water as it falls, and an eliminator section for removing entrained drops of water from the air.

To brush up on the facts behind this month's clues, refer to Chapter 19 ("Evaporative Air Cooling Equipment") in the 2004 *ASHRAE Handbook - Systems & Equipment*.



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Solution to January's HVAC Challenge™

