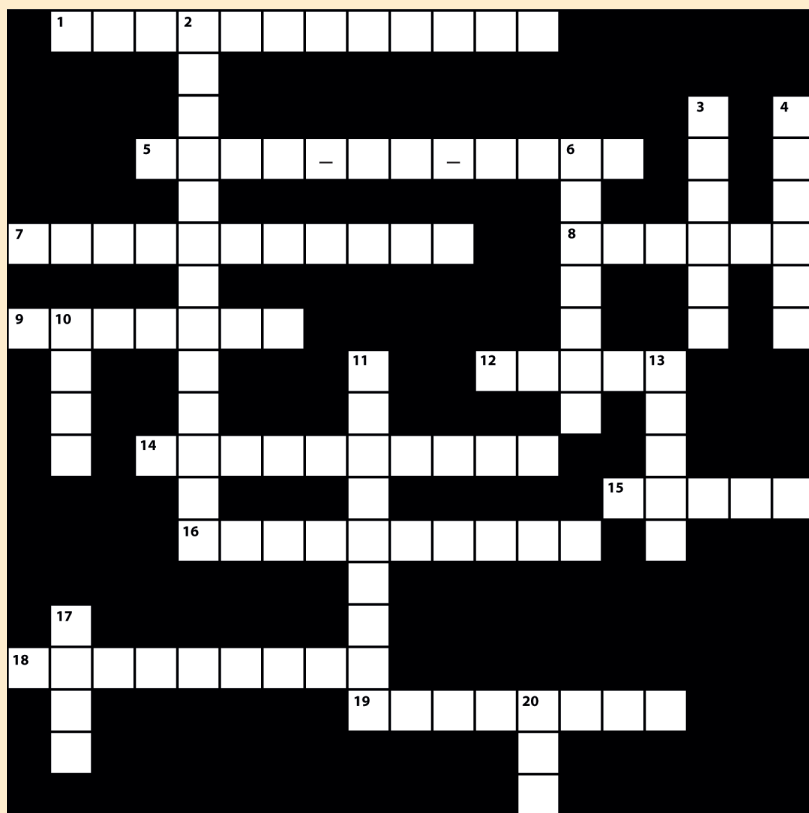




Take the HVAC CHALLENGE™

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

Mechanical Dehumidifiers and Heat Pipes



ACROSS

- When dehumidifiers are used, this must be able to drain easily from the coils.
- For this type of heat pipe application, one section of heat pipe is in the return airstream and the other is in the supply airstream.
- The need to introduce the code-mandated air into a building may require that the outside air be treated to avoid introducing excessive moisture.
- Humidifiers used for this type of air require simultaneous heat rejection from the hot gas to the reheat coil and another condenser because it may not always be possible to reject the total heat of rejection from the dehumidifying coil to this airstream.
- A heat pipe is this type of energy recovery device.
- For low-dewpoint applications, mechanical desiccant dehumidification may be used as this stage of the dehumidification process.
- This type of dehumidifier differs from a typical off-the-shelf air conditioner in that the dehumidifier usually has a much lower sensible heat ration.

- Mechanical dehumidifiers can often be incorporated in a system to use this type of heat from mechanical cooling processes.
- Dehumidified air leaves the coil at this temperature.
- Dehumidifier evaporators are protected against this with finishes such as waxing, painting, or anodizing.
- This type of dehumidifier is generally smaller than commercial dehumidifiers and has a moisture removal capacity range of 11 to 60 pints/24 hrs.

DOWN

- These are designed to provide optimum performance at standard conditions of 80°F db room temperature and 60% rh.
- In an indoor swimming pool application, this form of heat from dehumidification comes nearly exclusively from pool water.
- This air temperature from a dehumidifier can be controlled between 50° to 95°.
- Along with providing a healthy indoor environment, the proper moisture level is a contributing factor for this for the occupants.
- This organization publishes Standard DH-1-1992 – Major Appliance Performance Standard for Dehumidifiers.
- This type of heat pipe application removes sensible heat from the entering airstream and transfers it to the leaving airstream.
- This is the sum of the sensible and latent heat removed and is the net cooling capacity of a system.
- If moisture is not properly removed from a building, damage can result and this can develop.
- Typically, a room dehumidifier has this in the range of 0.60 or less, compared to a standard air conditioning system that reaches 0.80.

To brush up on the facts behind this month's clues, refer to Chapter 47 ("Mechanical Dehumidifiers and Heat Pipes") in the 2004 ASHRAE Handbook — HVAC Systems and Equipment.

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