



Take the HVAC CHALLENGE™

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Condenser Water Systems



6. The release of this is a characteristic of open condenser water systems that must be addressed.
8. This type of line can be used to ensure that the same water level is maintained in each tower when multiple cooling towers are used.
9. These can be installed in cooling tower basins to prevent freezing.
10. This is needed to help limit the level of concentrates of dissolved solids in a cooling tower system that results from evaporation of the cooling tower water.
13. This, loss along with the static head, must be taken into account when selecting a pump for a cooling tower condenser water system.
14. This arrangement should be used if two basket strainers are used in a cooling tower water system such that they can be alternately put into service and valved out for cleaning.
17. The level in this part of an open cooling tower should be above the top of the pump casing to maintain a positive prime on the pump.

To brush up on the facts behind this month's clues, refer to Chapter 13 ("Condenser Water Systems") in the *2004 ASHRAE Handbook — HVAC Systems and Equipment*.

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ACROSS

2. This type of tank can be installed indoors to prevent the cooling tower water from freezing.
5. Water treatment is needed in condenser water systems to prevent scaling, corrosion, and this type of fouling.
7. This is a possible cause of introducing air into a piping system at the tower basin outlet and can be avoided by ensuring that the maximum flow does not exceed tower manufacturer recommendations.
11. Using cooling towers as a source of condenser water is an example of this classification of condenser water system.
12. When this content is relatively high, scaling can be a problem with higher-temperature condensing surfaces.
15. Piping systems for once-through city water condenser water systems are generally made of this type of material.
16. This is the total head required of a condenser water pump, taking into account several elements such as static head from the tower sump, friction loss in the suction and discharge piping, and pressure loss in the condenser, control valves, strainer, and tower nozzles.

17. When condenser water is used in a system to provide waterside economizer cycles, the cooling coils should have this type of tube arrangement for visual inspection and mechanical cleaning.

18. This factor, along with an increased pressure drop caused by aging of the condenser water piping, must be taken into account in open cooling tower systems.

19. This type of strainer, when used in condenser water systems, should be equipped with inlet and outlet gages to indicate when cleaning is required.

DOWN

1. Using city water and well water as condenser water is typical for this classification of condenser water systems.
3. This occurs where pressure in the pipe drops below the vapor pressure at the water temperature and can damage the pump impeller and cause loss of capacity.
4. The high calcium content of this water source can cause scaling when used as condenser water.

Solution to September's HVAC Challenge™

