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A collection of short pointed topical papers.

Cold W·A·R·

Whether it's Air Conditioning or Refrigeration

SPORLAN

Unique Industry Terminology

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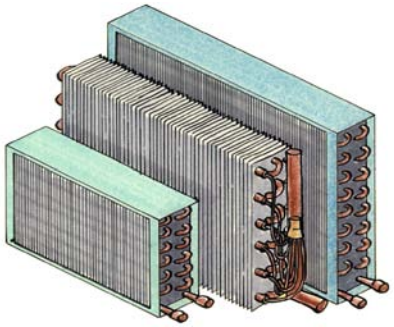
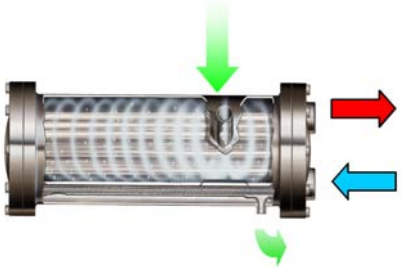


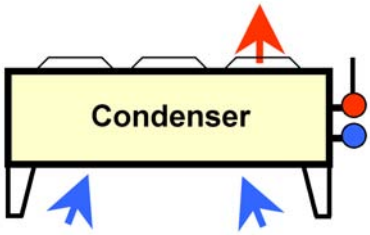
Finned-Tube Evaporator Coils

ΔT is Entering air – Leaving air
TD is Entering air – SST
Approach is Leaving air – SST
MTD is $\frac{(\text{Leaving air - SST}) + (\text{Entering air - SST})}{2}$



Water Cooled Condensers

ΔT is Entering H2O - Leaving H2O
TD is Entering Refrigerant - Entering H2O
Approach is Leaving H2O - SCT
MTD is $\frac{(\text{ERT} - \text{SCT}) + (\text{EWT} - \text{SCT})}{2}$



Finned-Tube Condenser Coils

ΔT is Leaving air - Entering air
TD is SCT - Entering air
Approach is Leaving air – SCT
MTD is $\frac{(\text{Leaving air - SCT}) + (\text{Entering air - SCT})}{2}$

ΔT is the temperature difference between two points in the ***same media.***

TD is the temperature difference between two points of ***different medias.***

SST is saturated suction temperature.

SCT is saturated condensing temperature.

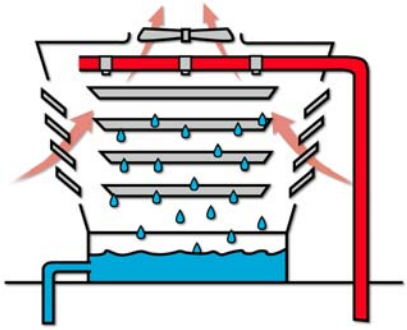
EWT is entering water temperature.

ERT is entering refrigerant temperature.

Approach
is the temperature difference between the leaving media and the leaving chilling / cooling source.

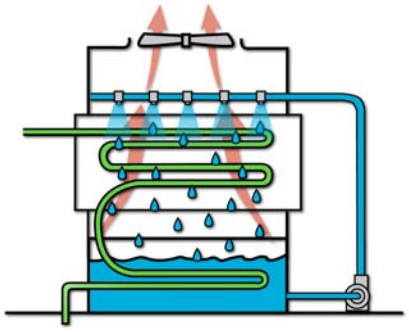
MTD (Mean Temperature Difference) is the average temperature difference of a temperature transfer process. MTD is always less than the arithmetic average temperature difference by 5 to 10%. (Carrier T200-32A)

Cooling Towers



A cooling tower cools the condenser water by spraying it through a stream of ambient air. A schematic diagram of a cooling tower and the manner in which it servers the refrigeration condenser is shown. The air and water flow patterns suggested are counter-flow, a frequently used pattern. The key concept is that the leaving water temperature can approach the wet bulb temperature of the entering air.

Evaporative Condensers



The evaporative condenser combines the functions of an air cooled condenser and a cooling tower. Refrigerant condenses within the tubes, as these tubes are sprayed with water through which an air stream passes. The evaporation of some water is the dominant process of rejecting heat to the atmosphere.

Glossary of Terms

Approach
is the temperature difference of the cooled water leaving the tower and the wet bulb temperature of the ambient air.

Bleed off or Blow-down
is the continuous or intermittent wasting of a small amount of the circulating water. Its purpose is to prevent an increase in concentration of solids in the water due to evaporation. It is expressed in a percent of the water circulated.

Blowout
having an air flow greater than design thereby causing "channeling" of air preventing proper mixing of the air and the water.

Drift
is the entrained water carried from the tower by exhaust air. It is expressed in a percent of the water circulated.

Make-up
is the water required to replace the circulating water which is lost by evaporation, drift, blow-down and leakage. It is expressed in a percent of the water circulated.

Range (a.k.a. ΔT)
the difference between the temperatures of the hot and cold water.

Washout
having a water flow rate greater than design thereby restricting air flow.