THERMAL SOLUTIONS

VAPOR CHAMBERS:

General Description:

A 2D vapor chamber is similar to a heat pipe but spreads heat in two dimensions. Vapor chambers are typically used on small surfaces that have high powers and heat fluxes applied to them (see figure 1). A vapor chamber contains a small amount of fluid, normally de-ionized water, that vaporizes when heat is applied in a specific area (evaporator) and this heated vapor rapidly spreads in the x, y axis, transferring the heat to the opposite surface where the heat is removed by convection. The vapor then cools and condenses (condenser) back to a liquid and works its way (capillary action) back to the heat source.

A 3D vapor chamber functions in the same way as a 2D vapor chamber but adds a third axis of heat transfer. JAMCOR/SJS Products attaches heat pipes directly to the vapor chamber creating a closed loop vapor chamber system and runs the pipes up through the fin assembly of the cooler. This type of vapor chamber solution maximizes the cooling of the air cooler.

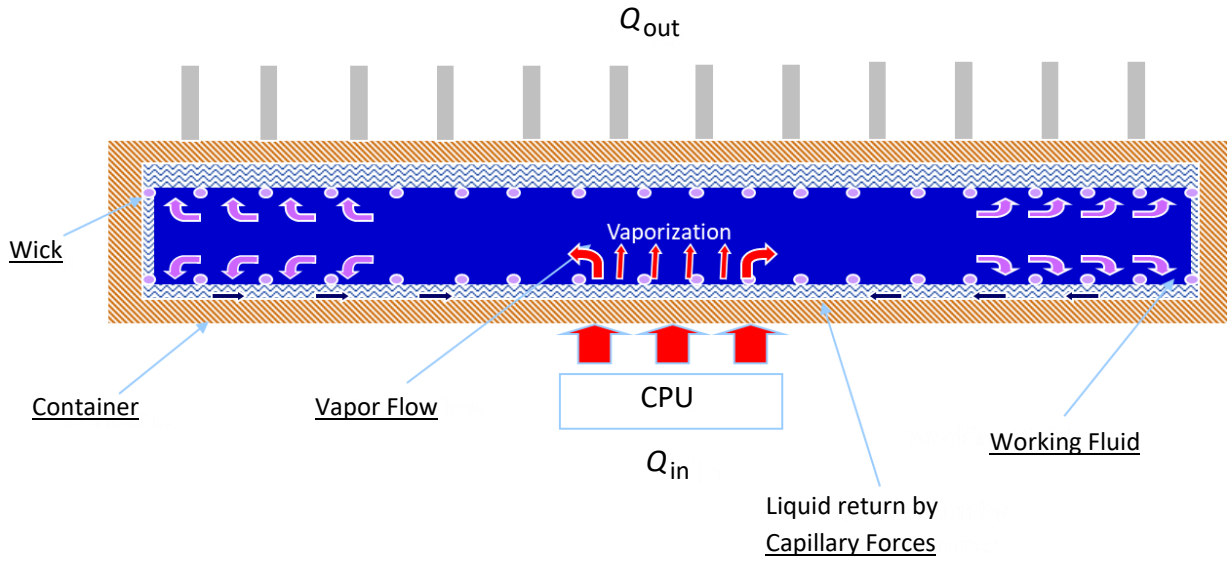
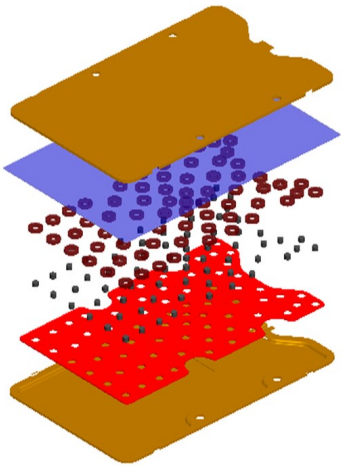


Figure 1: diagram of a two dimensional vapor chamber.



Condenser side

Coating treatment

Capillary Structure (powder ring)

Support structure (copper column)

Lower powder wick

Evaporation side

Figure 2: structure of a vapor chamber.