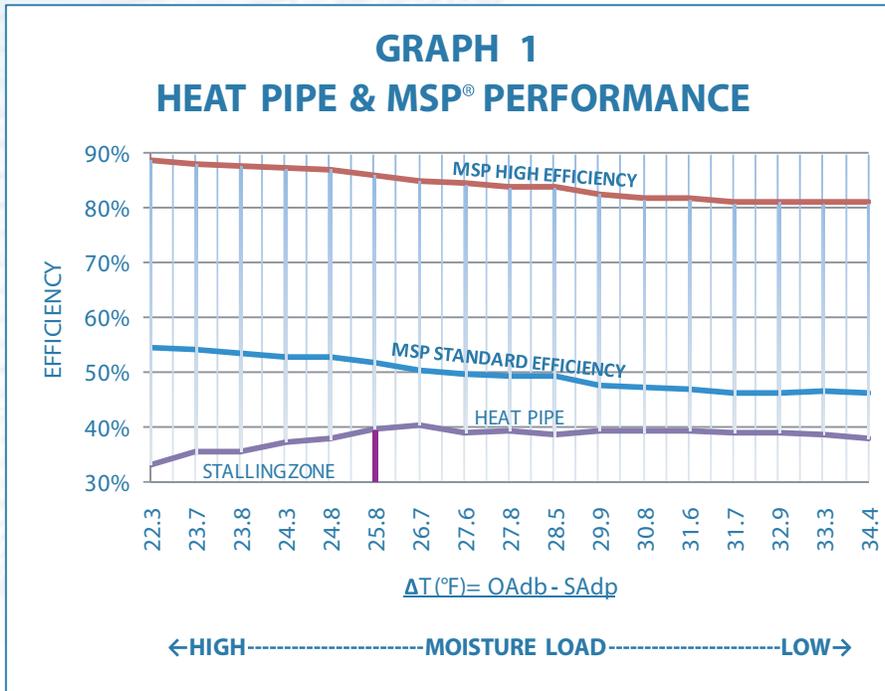


COMPARISON - HEAT PIPE & MSP



Graph 1 above illustrates performance differences between the MSP wrap-around plate dehumidifying coil and a heat pipe wrap-around dehumidifying coil. Data from the heat pipe study was taken from a Heat Pipe Effectiveness Study, Gulf Breeze Laboratory Installation Pensacola, Florida (<http://www.epa.gov/oaintmnt/energy/hpipe.htm>) published by the EPA. The MSP data was generated by plate heat exchanger performance software certified under ARI or Eurovent.

As evidenced in the above chart, heat pipe efficiency decreases rapidly under low ΔT conditions. A “stalling” condition occurs during periods of high moisture, when the ΔT is low and fluid movement in the heat pipes is reduced. On the other hand, plate heat exchangers increase in efficiency during high moisture loads because condensing on the cold side causes an increase in sensible gain on the warm side.

Under all conditions, plates perform best. This is especially true under high moisture loads. Conversely, under high moisture loads heat pipes lose capacity because the ΔT that drives the fluid flow is insufficient to maintain efficiency.

**TABLE 1
HEAT PIPE VS. MSP COMPARRISON**

Features	Wrap-around heat pipe	Wrap-around Plate
High Efficiency		✓
Operates at any mounting angle		✓
Performance is scalable over all models		✓
Efficiency increases with higher moisture		✓
Efficiency unaffected by coil dimensions		✓
Multiple airflow configurations		✓
Easy to clean heat transfer surface		✓

It should come as no surprise that plate heat exchangers have greater efficiency. Heat pipes have five transfer points **air** ▶ **fin** ▶ **tube** ▶ **fluid** ▶ **tube** ▶ **fin** ▶ **air**

Practical Efficiency - 40%

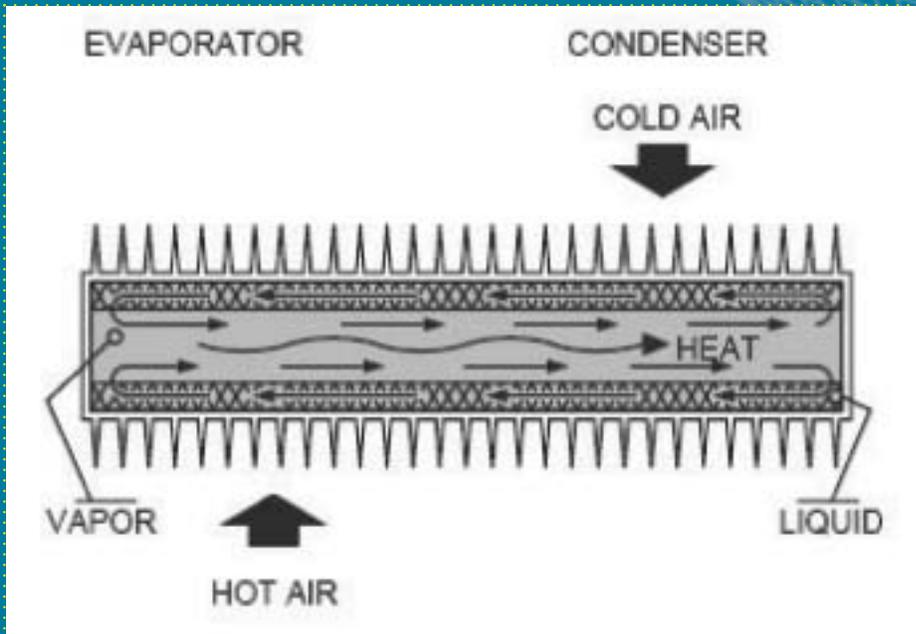
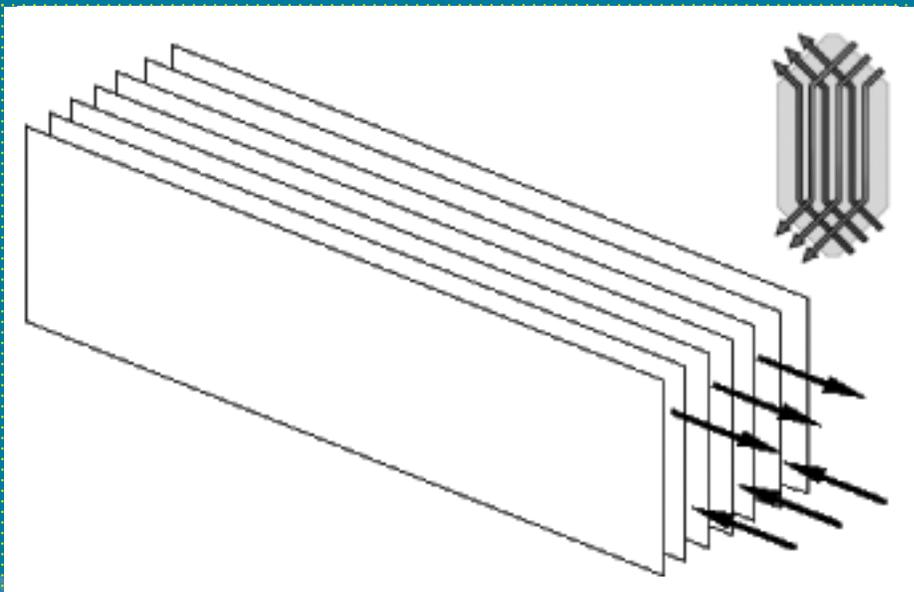


Plate Heat Exchangers have only one heat transfer point **air** ▶ **plate** ▶ **air**.

Practical Efficiency - 50% - 85%



GREEN DEHUMIDIFICATION

GREEN DEHUMIDIFICATION