

Flooded Systems

This system attempts to realize some of the energy efficiency of the liquid overfeed system, but like the DX system, still relies on the high side pressure to move refrigerant through the system. The fundamental difference between a *flooded* system and a DX system is the evaporator coils are fully wetted (in fact flooded, hence the name). Instead of using a thermal expansion valve, each evaporator has its own small receiver attached. The bottom of the receiver is more or less at the same level as the bottom of the coil, and the liquid level is about equal with the outlet of the coil. Liquid enters the coil by gravity, and as it boils off, the liquid vapor mixture, being less dense, rises to the coil outlet. The vapor is drawn off the top of the mini receiver or *surge drum* by the compressor and the liquid continues to recirculate via thermosyphon. As the liquid level in the surge drum drops because of evaporation a float controlled expansion valve opens up, and high temperature, high pressure liquid flashes into low temperature, low pressure liquid in the surge drum.

This type of system does, indeed, operate much more energy efficiently than the DX system because the entire coil surface is wetted, and none of it is wasted to perform superheating for compressor protection. Nevertheless, the liquid is still moved through the system by high side pressure, so the head pressure cannot be allowed to float down with the ambient to take advantage of cooler weather.