



Commercial POD Systems

The POD system employs evacuated tube solar collectors elevated to an appropriate angle with the horizontal plane affixed to a flat roof surface so that the single flow through header is significantly above the roof surface to allow the top of an atmospheric drain back tank to be positioned beneath the elevation of the header of the evacuated tube solar collectors. The drainback tanks are insulated and contain heat exchangers immersed within the heat exchange fluid contained inside of the tank. There may be interposed with the heat exchange fluid a phase change medium that absorbs and stores high amounts of heat energy by changing phase from solid to liquid and releases energy by changing phase back from a liquid to a solid.

The solar collectors are grouped in any appropriate number and matched to a specific drain back tank containing part heat transfer fluid and phase change material. Any number of these groupings called PODs is disbursed on the roof of the high rise structure. Each POD is a self contained drain back system in and of itself. Throughout the day the solar panels generate heat which is stored inside the insulated drain back storage tank.

The heat is injected into the high rise central water heating system by means of drawing water from the hot water circulation system constantly coursing through the building. The drawn water is then passed through the heat exchanger contained within the insulated solar drain back storage tank and returned downstream back into the buildings hot water recirculation system.

Additional heat storage may be obtained by introducing an additional drain back storage tank of a larger size in the return leg of the circulation system on the ground level. The introduction of fresh cold water into the water heating system would first pass through the heat exchangers in the base storage tank before entering the boiler heated pressurized storage tank thus reducing the energy required to heat water.

The introduction of phase change material into the fluid inside of the storage tank serves to reduce the size and the weight of the storage tank. This is important because it significantly decreases the problems of supporting the weight of the roof top drain back tanks.

Accordingly, it is an object of the present invention to provide an improved solar water heating system for high rise buildings through a recirculation hot water system contained within the structure.

**FIGURE 1
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