

Open-circuit cooling tower

Similarly, in a closed-circuit cooling tower or evaporative condenser, the heat is rejected indirectly from a fluid or vapor flowing through the coil section by spraying re-circulated water over the coil section, again evaporating a small percentage of the water in the process.

The temperature at which the cooled fluid is returned to the system measures tower performance. The temperature can vary depending on the cooling load, water flow, airflow and the entering air conditions.

Because temperature matters so much, owner confidence in cooling tower performance will be enhanced by selecting a tower model whose performance is certified by the Cooling Technology Institute (CTI).

Also, performing routine preventive maintenance is paramount for consistently achieving the desired temperature and flow rate, and plays an important role in maximizing cooling tower operating life.

To perform properly, all tower components must be kept clean and free of obstructions. Neglecting the cooling tower will lead to higher-than-desired return water temperatures to the system, which will result in higher energy usage from two perspectives.

First, the system (chiller) will consume more energy because it must operate at a higher-than-necessary condensing pressure to satisfy the load due to the higher fluid temperatures provided by the cooling tower. As little as 2° F higher temperature can result in 6 percent more energy being consumed by the chiller. Second, the tower must operate longer at higher fan horsepower, while trying to attain the design cold water temperature.

Maintenance procedures

The following sections describe standard maintenance procedures for optimized circulating water system operation. These procedures can prevent loss of efficiency in the heat transfer section by maintaining proper water and airflow, as well as preventing cor-



• In an open-circuit cooling tower the evaporation process removes heat and cools the remaining water, which is collected in the cooling tower.



• In a closed-circuit cooling tower or evaporative condenser, the heat is rejected indirectly from a fluid or vapor.