



Zhejiang Aoshuai Refrigeration Co., Ltd.

Advantages And Disadvantages Of Several Common Cooling Towers

a. Advantages and disadvantages of open cooling tower:

Open cooling tower has the advantages of simple structure, low cost, convenient maintenance and repair, which is a common equipment in the early cooling equipment. However, the [open type cooling tower](#) is exposed to the air because of the fan motor and blade, so the operation noise is relatively large; because it is an open system, when the cooling tower is in operation, it will produce the phenomenon of floating water, resulting in water loss, so it is necessary to make up water frequently, at the same time, it will pollute the cooling water to a certain extent, making its water quality decline, and the external debris will also enter the cooling water, The pressure loss of open cooling tower is higher than that of closed cooling tower.

b. Advantages and disadvantages of closed cooling tower:

Because the [closed type cooling tower](#) is totally closed circulating cooling, there is no debris entering into the cooling pipeline system, resulting in pipeline blockage; soft water circulating cooling has no scale formation at high temperature, causing scaling in the cooling pipeline system; it covers a small area, does not need to open a pool, is easy to locate, saves water and reduces energy consumption; it adopts air-cooled evaporation and endothermic double cooling It can directly cool water, oil, alcohol, quenching liquid, salt water and chemical liquid without loss and stable composition. Due to closed circulation, the medium is not affected by the environment and will not pollute the environment. The pressure loss of cooling water is less than that of open cooling tower.

Disadvantages: due to the use of a large number of high heat exchange performance but expensive copper coil, closed cooling tower is generally expensive. If properly maintained, in the long run, the total cost of the closed cooling tower will be equal to or slightly higher than that of the open cooling tower due to its energy-saving and consumption reducing characteristics, longer service life and stable cooling performance; if the temperature is low in winter in northern China, if effective anti freezing measures are not taken, local frost cracking of the cooler may be caused.

c. Advantages and disadvantages of FRP cooling tower:

Cooling tower is a kind of equipment that uses the function of air to dissipate heat energy. Its working principle is: the low temperature and dry air enters the cooling tower from the air inlet after being pumped by the fan; it fully contacts with the hot water of the water distribution system in the cooling tower, and the hot water and cold air exchange heat energy to achieve the purpose of cooling.



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a) **Cross flow FRP cooling tower:** water is in the tower packing, water flows from top to bottom, air flows horizontally from outside the tower to inside, and the two flow directions are vertical and orthogonal. It is commonly used in residential areas with strict noise requirements, and it is a cooling circulating tower widely used in air conditioning industry. Advantages of: energy saving, low water pressure, small wind resistance, also equipped with low speed motor, no dripping noise and wind noise, convenient maintenance of packing and water distribution system. It should be noted that: the frame should be 40% more, there should be more filler volume during heat exchange, the filler is easy to aging, the water distribution hole is easy to block, the anti icing is not good, and the moisture backflow is large. The advantage of [cross flow type cooling tower](#) is just the disadvantage of counter flow tower. According to the shape of the building, the foundation can be built at will, and several cooling towers can be set up according to the required water temperature.

b) **Counter flow FRP cooling tower:** water in the tower packing, water from top to bottom, air from bottom to top, the two flow opposite a cooling tower. The [counter flow cooling towers](#) has good thermal performance and can be divided into three cooling sections: the space from the water distributor to the top of the packing, where the water temperature is relatively high, so the heat can still be transferred to the air; the heat exchange section between the packing water and the air; the water spraying section from the packing to the sump, where the water is cooled, is called "tail effect". In the north of China, the water temperature can drop by 1-2 °C.

In conclusion, under the same conditions, the packing volume of counter flow tower is about 20% smaller than that of cross flow tower, the heat exchange process of counter flow tower is more reasonable and the cooling efficiency is higher. The water distribution system is not easy to be blocked, the drenching filler is kept clean and not easy to be aged, the moisture backflow is small, and the anti freezing and deicing measures are easier. Multiple units can be designed in combination. In winter, with the required water temperature and quantity, single unit can be combined to operate or all fans can be shut down. Easy installation and maintenance, low cost, commonly used in air conditioning and industrial large and medium cooling circulating water.