

FLOW CHART FOR CALCULATING THE AVERAGE CHILLED WATER TEMPERATURE LIMIT

Muhammayoquboy X., Norxo‘jayeva N.

Fergana Polytechnic Institute

“Electrical engineering, electrical mechanics and electrical technologies”

ABSTRACT

In such IAAs, hot and cold heat carriers directly touch each other and then mix. For example, high-temperature steam from the boiler unit is mixed with cold or warm water, and then transferred to consumers. Such IAAs include coolers, deaerators, scrubbers, and other devices.

Keywords: Temperature change, space, Heat flow.

Recuperative. In such IAAs, heat is transferred through a separating wall (usually metal). Such devices include steam generators, vaporizers, water heaters, air heaters and various vaporizing devices. Currently, recuperative devices are the most widespread. Their structure is very simple, compact and ensures constant temperature of heat carriers.

Recuperative devices are mainly made of metal. For heat carriers with a temperature of 400-450°C, pipes are made of carbon steel, and for heat carriers with a temperature of 500-700 °C, they are made of alloy steel.

“Pipe-in-pipe” water cooler can be designed as collapsible or non-collapsible. Non-condensing water coolers have a fixed design, so they are not used in cases where the temperature difference exceeds 70 °C. Collapsible water coolers consist of an inner (water cooling) pipe 1, an outer (shell) pipe 2, a bracket 3, a flange 4 and a separating chamber 5. The direction of movement of the heat carrier is given using landing indicators.

The standard diameter of water cooling and casing pipes can be $d=25\div 157$ mm and $D=38\div 220$ mm, respectively. sections of the water cooler are usually interconnected and made into a single system.



1- Figure. Assembled heat exchanger

The total size of the system can be changed as desired: sometimes the entire building wall is surrounded by a water cooling device. "Pipe-in-pipe" is used for heating or cooling with the help of liquid-liquid system without high consumption of heat carriers. Such devices are sometimes used as condensers for high-pressure liquid and gaseous media, for example, in the production of methanol and ammonia. Compared to shell-and-tube water coolers, these devices have less hydraulic resistance and, as a result, the movement of heat carriers is much faster. But they are relatively rougher and more inconvenient to use.

Layered heat exchangers are devices whose surface consists of thin corrugated metal plates. Such devices are produced in assembled and non-assembled versions. Assembled devices are shown in Figure 1

In the heating (cooling) of liquids and gases, it is necessary to take into account not only various structures that differ in internal metal capacity, unification index, compactness and other characteristics, but also special properties of one type of devices. For example, shell-and-tube devices differ according to the diameter of the shell or pipe, the number of paths in the pipes. Because depending on these characteristics, their heat transfer and heat transfer, hydraulic resistance and related energy consumption indicators are different.

One of the main issues in the modeling of water cooling systems and performing related calculations is to compare options that differ in terms of their mutual structure, location of elements, order of movement of heat carriers, and temperature indicators. The goal of the calculation process is to find the best option and select the optimal option when there are many devices.

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