

I'm not a bot



always found on a water-cooled chiller. However, they also can be found on a water source heat pump for hot water. Water-Cooled Chiller Shell-and-tube heat exchangers are typically made of copper and low-carbon steel. The shell-and-tube heat exchangers in water-cooled chillers can have several different external appearances. When used as evaporators, the shell-and-tube heat exchangers are black in color because they are wrapped with a layer of closed-cell insulations to prevent condensation. When used as condensers, the shell-and-tube heat exchangers are usually painted in green color or beige color. However, they can also be painted with other colors depending on the buildings requirements. Shell-and-tube heat exchangers have two types of flow patterns; a) parallel flow and b) counterflow. Then, the flow can be 1-pass, 2-pass or 3-pass. Counterflow Flooded Type Shell-and-Tube Heat Exchanger Among all, 2-pass counterflow shell-and-tube heat exchangers are more common in HVAC. However, people working in the HVAC industry prefer to call them 2-pass chillers or counterflow chillers. The number of heat exchanger passes determines the efficiency and the amount of pressure drop across a shell-and-tube heat exchanger. The higher the number of passes, the greater the heat exchange at the expense of a higher pressure drop. Furthermore, a water-cooled chiller or a shell-and-tube heat exchanger can be categorized as either dry type or flooded type. In a dry type shell-and-tube heat exchanger, the refrigerant is flowing through the tube while the water is filling up and flowing through the shell. In a flooded type shell-and-tube heat exchanger, the refrigerant is filling up and flowing through the shell while the water is flowing through the tube. Dismantled Shell-and-Tube Heat Exchanger Dry type shell-and-tube heat exchangers are used in low capacity water-cooled chillers while most water-cooled chillers with medium to large capacity use flooded type shell-and-tube heat exchangers. Tube-in-tube heat exchangers are small yet efficient heat exchangers designed for high pressure but low water flow applications. As far as I know, a tube-in-tube heat exchanger can be found in a water-cooled VRF unit. Daikin Water-Cooled VRF Tube-in-tube heat exchangers are made of copper and stainless steel. The inner tube is made of corrugated copper tube and the outer tube is made of stainless steel tube with a layer of PVC material and thus, they are black in color. Sometimes, tube-in-tube heat exchangers are known as coaxial tube heat exchangers. Tube-in-Tube Heat Exchanger Water-cooled VRF units are compact and hence, they are often placed above the ceiling or inside a cabinet. They have a compressor to produce cold refrigerant for air conditioning but they need condenser water for heat rejection. Hence, cooling towers and condenser pumps are needed. The refrigerant of a water-cooled VRF unit is flowing through the outer tube of the heat exchanger while the condenser water is flowing inside the inner corrugated copper tube. Similarly, tube-in-tube heat exchangers can have the refrigerant and the water flow in either parallel flow pattern or counterflow pattern. Counterflow Tube-in-Tube Heat Exchanger Nevertheless, tube-in-tube heat exchangers are rarely seen in HVAC since water-cooled VRF units are also not as common as other types of air conditioners. Plate heat exchangers are fairly common in HVAC but only in large cooling applications. They are more likely to be used in the chilled water system. In HVAC, plate heat exchangers are typically used to exchange the heat energy between two separate sources of chilled water. Plate Heat Exchanger A plate heat exchanger can be found in tall buildings where it is used to break the chilled water system pressure. In addition, a plate heat exchanger can also be found in buildings that use a district cooling system. Usually, the chilled water system operates at around 10-12 bar of pressure. If the building is very tall and the water pressure exceeds 20 bar, plate heat exchangers can be placed on intermediate floors to break the pressure down to below 20 bar. When used in the district cooling system, plate heat exchangers can be found in buildings that don't have chillers. The plate heat exchangers serve as the chillers where they get the chilled water from the district cooling plant. On one end, the chilled water from the district cooling plant is flowing through the plate heat exchangers. On the other end, the chilled water within the building circulates through the same plate heat exchangers. Uninsulated Plate Heat Exchanger Plate heat exchangers used in HVAC are mostly made of thin sheets of stainless steel. Hence, they are silver in color. However, when used for chilled water, they are often black in color because they are wrapped with a layer of closed-cell insulation. But, if panel insulations are used, they can be seen in silver color. Depending on applications, most HVAC plate heat exchangers are huge. They are often standalone and not incorporated in any HVAC unit. Although plate heat exchangers are very similar to brazed plate heat exchangers, they have additional gaskets and they don't come in bronze color. Lastly, consider my HVAC Begin (eBook) if you're a beginner and you want to have a foundational knowledge in HVAC. But, if you have a year or two of experience, then I would suggest you consider my HVAC Basics (eBook). Nonetheless, I encourage you to enroll in my HVAC Beginner Course: 10 Days to Become Competent in HVAC if you want to equip yourself with a complete set of basic HVAC skills. Learn the most basics and foundational HVAC skills including cooling capacity calculation, equipment selection, duct sizing, pipe sizing, exhaust fan sizing, controls, electrical and more.

What is the function of a heat exchanger in an hvac system. What is a heat exchanger in a house. What is a heat exchanger for. What is the purpose of a heat exchanger in an hvac system. What is a heat exchanger in an air conditioner. How does a heat exchanger work. How does a heat exchanger work hvac.