

Chiller vs Cooling Tower



We often get the question as to when to use a chiller and/or cooling tower for process cooling.

The easy answer is “ What temperature water/glycol do you need” ?

If your requirements are for 90 deg F (32 C) then you most likely need a Cooling Tower or Fluid Cooler. Since you are relying solely on the Ambient Temp to cool your Glycol, selection of this FAN ONLY machine is imperative.

If you require Water or Glycol year round to be between 80- 90 deg F then use of chiller and Fluid Cooler is recommended. You can use the Fluid Cooler (DRY Cooler) when Ambient Temp makes it more efficient to do so and run the chiller when outdoor temps are higher or more tight control is required.

If you require stable Temperatures below 75 F (24 C) then you most certainly require an Air or Water Cooled Chiller. An Economizer Fluid Cooler could still be used in conjunction with a chiller. A Chiller utilizes a refrigeration system to control and remove heat from the Glycol Loop. This Allows the user to set a temperature and not be reliant upon the outdoor condition.

A Purestream Chiller only provides the cooling load required at any given ambient condition and is extremely efficient at Part Load due to it's design. By only activating the number of compressors required it is ideal for multiple and intermittent loads. The multiple scroll design provides better redundancy then a Variable Speed Scroll and will also maintain a low load condition without having to ramp up to 100% to maintain oil return.

The Harder question is if my Glycol or Water temperature required is 90 F, can I still use a chiller ?

The answer is yes, if replacing the entire system or modifying/designing a new one. Cooling towers use a higher flowrate of warmer water to accomplish the heat transfer required. Maybe it is worth investigating a lower flowrate at a cooler supply temp for your machinery. Every system is different and site conditions can influence the type of system required.

The Recirculating Chiller can offer much better control, but may use more energy as you are now running compressors instead of just fans. However you need to look at the big picture and the amount of downtime and maintenance issues caused by not having a reliable source of cool water in your plant.

On some projects the installation of a mixing valve between the supply and return of the chiller can allow you to return 100 deg or higher water temp from your process, and still protect the chiller or have it run outside the standard range.

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