Plant Assignments: Selecting a Cooling Tower for Use with a New Centrifugal Chiller

The Task in Perspective
The Minnesota State University campus in Mankato employs three centrifugal chillers located at the campus Facilities building. These chillers produce cold water which is used for air conditioning across campus. With the building expansions currently planned these three chillers may prove to be insufficient to produce enough chilled water. Therefore, the MNSU Facilities Department is currently considering the addition of a fourth chiller. Due to space limitations this chiller may be located remotely in one of the new buildings. This will also require that a cooling tower be selected for installation on, or near, this building.

Work Assignment
Your task will be to perform the preliminary selection of a cooling tower for use with this new chiller. Determine and clearly specify in your design memo the necessary design parameters (water temperatures, outside air dry- and wet-bulb temperature, and cooling tower capacity). Using this information, review the major manufacturers’ products to determine the available options. Select the three best choices and summarize all three in a table. From these three select what you think is the best choice. Describe why you selected this cooling tower over the other two. This should be in a memo format. Remember, you do not work for one of the manufacturers but for the University. Do not make the memo sound like a sales pitch for a tower manufacturer.

Additional Information
There are several main manufacturers of cooling towers, including Baltimore Air Company, Evapco, and SPX (which produces the Marley line of towers). Information for each of these company’s products can be found online by searching for the main company. Assume the new chiller will be similar to the first McQuay chiller installed on campus with a capacity of 1000 tons. Information on the existing chillers is available in the Engaged in Thermodynamics Additional Documents section.