Abstract

The main objective of this design is to cool a drinkable fluid at room temperature to a specified lower temperature in a specified amount of time. Currently, drinkable fluids such as water, carbonated drinks and fruit drinks are cooled either in a conventional refrigerator or by adding ice directly to the fluid. Experience will tell us that these conventional methods also have some drawbacks. For instance, adding ice to a soda-pop will cool it in a reasonable amount of time, but through this cooling process, the ice will dilute into the soda-pop causing a “water-down” effect on the fluid. Another drawback that arises in the conventional method of using a refrigerator is time. The average time for a refrigerator to cool a 12 oz liquid from a room temperature of 74° F to a chilled temperature of 40° F is roughly 20 minutes. Since at times this wait is unacceptable, it would then be useful for an apparatus to chill a drink in a small amount of time with out having to add ice or put it in the refrigerator for 20 minutes.

This new design was developed and formulated using the idea of less time and less drawbacks. The design was accomplished by using a vapor compression refrigeration cycle consisting of an evaporator, compressor, condenser and a capillary tube used in replacement of an expansion valve.
Figure 5.2  Experimental Set-up of Test Run 1