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FABRICATION, EXPERIMENTATION, PERFORMANCE EVALUATION OF TWO STAGE AIR COOLER AND COMPARISON WITH CONVENTIONAL AIR COOLER

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ABSTRACT

During summer use of khush curtains and water spraid over the khash (fibre) curtain for air cooling is done. But the determination of the extent of cooling is limited up to the wet bulb temperature in Conventional Cooler air is passes at uniform rate through wetted pad. In this process humidity increases sometimes which is not desirable. In Two Stage Air Cooler the primary air is cooled by a contact surface which is maintained at lower temperature air and water on the other side of the contact surface.

After analysis it is found that in Two Stage Air Cooler Effective temperature decreases COP increases up to 13 which are significantly higher than normal cooler and conventional air conditioner. Refrigeration effect increases. Makeup water recharges time increases for the same configuration has been obtained for it is 24 hours 54 minutes and for conventional cooler it is 15 hours 2 minutes. In two stage air cooler with cover noise has been drastically reduce by the increase damping effect of covers Specific humidity increase is significantly lower than that of in case of Conventional Cooler.

On the basis analysis it is recommended that two stage indirect air cooler is energy effective, eco friendly, cost effective cooling system and with some further modification it may be hope as replacement of air conditioner. In direct cooler expected limit lower temperature was 22.6 where as experimentally the temperature attains are 24. In indirect cooler system the expected temp was 20.5 where as the actual temperature attain is 21.9 less than the wet bulb temperature with lesser relative humidity than 100%).

KEYWORDS: Auxiliary Pump, Conventional Air Cooler, DBT, Heat Exchanger, Primary Pump, Two Stage Air Cooler WBT