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Guided By

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# SMT. S. R. PATEL ENGINEERING COLLEGE, UNJHA

**Project Title**

## DESIGN, FABRICATION AND TESTING OF DESICCANT EVAPORATIVE COOLING SYSTEM


## Abstract:

Air conditioning is essential need in modern days for human comfort it is adopted all over taking from domestic use to the industrial and commercial purpose. Conventional air conditioning system works on vapor compression cycle.it simple in working as well as easy to handle. Although there are several problems associated with it such as higher power consumption and use of C.F.C.s refrigerant which cause environmental issues like global warming and ozone layer depletion. Instead of using conventional air conditioning system we can use desert cooler which is cheaper as well as low power consuming. It capable of provide comfort at low relative humidity. But it cannot handle high humid air. In order to overcome this problem desiccant material is used to lower the relative humidity of entering air of dessert cooler.

In literature review the basics of dessert cooling and behavior of desiccants is studied. The various research papers on simple system on desiccant cooling, contribution of system component and operating conditions to performance of desiccant cooling system, desiccant wheel, properties of solid desiccant material, heat wheel, adsorption characteristics of silica gel. Based on literature review single stage desiccant cooling selected. Silica gel selected as solid desiccant material to develop a system. Testing on silica gel has been done to check its property to absorb the moisture.

Instead of desiccant wheel wooden matrix boxes are adopted for testing. The system has been tested under condition of 330c dry bulb and 26.50c wet bulb temperature. By using the system along with desiccant material the temperature fall is reduced to 10c compared to normal desert cooler. Though the volume flow rate of modified cooler is reduced still C.O.P. is 7.07 has been achieved.


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