

# **EXPERIMENTAL INVESTIGATION OF VARIOUS SOLID DESICCANT MATERIALS IN DESICCANT WHEEL**

**M Tech Dissertation**

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**April 2019**

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## Abstract

As the limited source of Non-renewable energy it is necessary of conserve the energy till new researches and achievements towards the conservation of our system to Renewable sources. In many parts of India, hot and humid conditions are present. In such an environment, the dry air is essential for domestic and industrial purposes.

The dry air is produced by using the simple vapour compression system but it leads to environmental issues like ODP, Global warming, and Green house effect. In hot and humid condition we required low relative humidity (50 to 60%) during cooling and dehumidification process. But during cooling and dehumidification process in conventional air conditioning system the temperature of air will goes down below dew point temperature and that leads the issue of the reheating process that again leads electrical energy consumption.

It is pertinent to find the technologies which consume less electrical energy and more environmentally. The simple and effective way of producing the dry air is based on the chemical dehumidification (desiccant system). Desiccant based air conditioning system is such which can use solar energy or waste heat for reheating and which saves energy. There are two types of desiccants are used for dehumidification purpose. Solid desiccant and liquid desiccant. The liquid desiccant based air conditioning system is new technology and need lot of money for making such a cooling system.

There is one way to conserve energy is based on the solid desiccant system. The various solid desiccants like silica gel, activated alumina, activated charcoal, molecular sieve and polymer desiccant etc are used to produce the dry air. This method has low operating and maintenance cost and is environment friendly. Also, these desiccants perform very well in high humid regions and are easily regenerated in tropical conditions of India.

In this project I am experimentally investigating the adsorption performance of the desiccant material at various air flow rate.