

# INVESTIGATION OF AIR CONDITIONER USING HYBRID LIQUID DESICCANT SYSTEM

**M Tech Dissertation**

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by

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## ABSTRACT

In a global era, continuous increment in energy requisition with its associated cost and relevant climate problems is causing accentuation in exploring more efficient ways to provide air conditioning in enclosed space without degradation of the environment. In the hot and humid area, major part of conventionally produced electrical energy is consumed by air conditioning. LDCH (Liquid desiccant-vapor compression hybrid) air-conditioning systems are popular for reducing energy consumption. In conventional air-conditioning systems with vapor compression cycles the dehumidification is realized by cooling the air below the dew point of the supply air. One possibility to avoid cooling the air below the dew point and thus to reduce the electric energy demand of air-conditioning systems is hybrid liquid desiccant air-conditioning systems(HLDACS)which use an open absorption cycle for dehumidification of the air. Our main focus of study is to integrated condenser and regenerator as a single part and dehumidifier and evaporator as a single entity and analyze the performance like energy saving, effectiveness and efficiency of system. Experiment has been performed at different velocity of air like 13.5,17 & 19m/s with Simple VCR system, Hybrid system VCR+LD (Calcium chloride) and also Combination of VCR+Water. Different parameter like Sensible cooling, latent cooling, Total Cooling rate, COP, EER, change in humidity has been calculated.