

Ionic Liquid Desiccant for the Dehumidification System

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Abstract : Emerging markets are almost in the high temperature and high humidity area. Regardless of industry or domestic fields, the energy consumption of air conditioning systems in buildings is always significant. Moreover, the proportion of latent heat load is high. A liquid desiccant dehumidification system is one kind of energy-saving air conditioning system. However, traditional absorbents such as lithium chloride are hindered in market promotion because they will crystallized and cause metal corrosion. This study used the commercial ionic liquid to build a liquid desiccant dehumidification system with an air volume of 300 CMH. When the absolute humidity of the inlet air was 15g/kg, the absolute humidity of the outlet air was 10g/kg. The operating condition of a hot water temperature is 45 °C, and the cooling water temperature is 15 °C. The test result proves that the ionic liquid desiccant can completely replace the traditional liquid desiccant.

Keywords : ionic liquid desiccant, dehumidification, heat pump, air conditioning systems

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