

Documents

Nasif, M., Al-Waked, R., Morrison, G., Behnia, M.

Membrane heat exchanger in HVAC energy recovery systems, systems energy analysis
(2010) *Energy and Buildings*, 42 (10), pp. 1833-1840. Cited 69 times.

Abstract

The thermal performance of an enthalpy/membrane heat exchanger is experimentally investigated. The heat exchanger utilizes a 60gsm Kraft paper as the heat and moisture transfer surface for HVAC energy recovery. The heat exchanger sensible, latent and total effectiveness have been determined through temperature and moisture content measurements. The annual energy consumption of an air conditioner coupled with an enthalpy/membrane heat exchanger is also studied and compared with a conventional air conditioning cycle using in-house modified HPRate software. The heat exchanger effectiveness are used as thermal performance indicators and incorporated in the modified software. Energy analysis showed that an air conditioning system coupled with a membrane heat exchanger consumes less energy than a conventional air conditioning system in hot and humid climates where the latent load is high. It has been shown that in humid climate a saving of up to 8% in annual energy consumption can be achieved when membrane heat exchanger is used instead of a conventional HVAC system. © 2010 Elsevier B.V. All rights reserved.

2-s2.0-77955576099

Document Type: Article

Publication Stage: Final

Source: Scopus