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Experimental Investigation on a Desiccant Silica Bed for Dehumidification

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ABSTRACT

Energy demand is getting higher from time to time all over the world especially in Malaysia. In order to cope with energy cost and climate change that taking place to achieve the thermal comfort, alternative cooling methods should be placed to reduce consumption of energy. Desiccant cooling technique is one of the promising alternative method, avoids the refrigerants use and eliminate effect on the ozone layer. This study focused on single layer hollow silica gel bed dehumidification ability as the solid desiccant material under variable air velocity between 1 ms^{-1} to 5 ms^{-1}. Experimental investigation concluded that moisture adsorption ability is increased respect to air velocity for hollow desiccant arrangement for 1 ms^{-1} to 2.1 ms^{-1} range. However, 2.1 ms^{-1} to 5 ms^{-1} showed steep decrease in moisture adsorption. 5 ms^{-1} air velocity illustrated 10.5 times lower dehumidification than 3.7 ms^{-1}.