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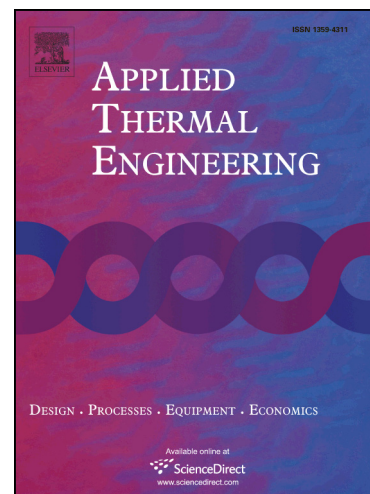
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## Energy saving assessment of a desiccant-enhanced evaporative cooling system in variable air volume applications

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### Abstract

Desiccant-enhanced evaporative (DEVap) cooling system have been recently introduced as an alternative to conventional air conditioning systems. This system consists of a liquid desiccant dehumidifier and a dew point evaporative cooler. In this research, workable operation strategies for the DEVap system were suggested and applied to an energy simulation for estimating the energy saving potential of the system over the conventional variable air volume (VAV) system. Four different modes of operation determined according to outdoor air conditions were suggested for annual operation of the DEVap system. Energy simulations for both DEVap and VAV systems were performed for a model office building. The results showed that 2-3% of annual primary energy could be saved by using the DEVap cooling system compared with the conventional VAV system.

**Keywords:** Desiccant-enhanced evaporative cooler, non-vapor-compression system, variable air volume, DEVap cooling system, operation strategy.

### Nomenclature

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