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# Experimental investigation on performance of desiccant coated heat exchanger and sensible heat exchanger operating in series

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## Highlights

- Performance of DCHE and SHE operating in series is tested.
- Improved performance is obtained.
- Lower cooling water temperature is recommended.

## Abstract

As a novel solid desiccant component, solid desiccant coated heat exchanger (DCHE) is proposed by coating solid desiccant material to conventional sensible heat exchanger (SHE) surface. The idea of adopting a DCHE and a SHE operating in series is proposed and an experimental setup was built up to investigate its performance. Results show that with use of an auxiliary SHE, the temperature variable rate increases obviously, meanwhile about 4°C lower outlet temperature can be obtained, the corresponding cooling power and COP increase by about 75% and 13% respectively. Besides, lower cooling water temperature is recommended to obtain enhanced system performance, system performance increase with increasing inlet air temperature and relative humidity ratio, the recommended air velocity is different with respect to different aims.

**Key words:** Desiccant coated heat exchanger; Sensible heat exchanger; Operating in series; Performance.

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