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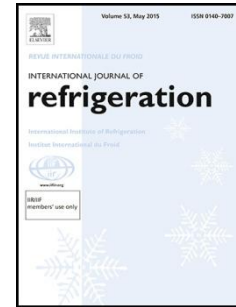
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## Experimental Investigation of Multi-effect Regenerator for Desiccant Dehumidifier: Effects of Various Regeneration Temperatures and Solution Flow rates on System Performances

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### Highlights

- Experimental investigation of vacuum assisted multi-effect desiccant regenerator.
- The efficiency of the regenerator is presented in terms of performance ratio.
- Three regenerator-configurations are presented with respect to steam and LiCl solution flow-types.
- Stem flow in one stage and LiCl solution flow in three stages provide the best performance for desiccant dehumidification.
- Performance ratio decreases with high concentration feed input.

### Abstract

We have experimentally measured the thermal performances (PR) of vacuum assisted multi-effect regenerator, which employs hydrophobic membrane to separate water vapor from LiCl solution with higher evaporation rates. We have modified the working principles of the conventional multi-effect membrane distillation (MEMD) by the transfer of heat from one stage to the other stage of regenerating module such that more energy can be recovered through multi-effect evaporation generated in each regenerating module with enhanced liquid vapor separation in the membrane. The PR and percentage change in desiccant concentration are measured for the

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