



## Validation of thermal models to predict the heat and mass transfer coefficients for indoor simulation

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### ABSTRACT

The objective of this study is to predict the heat and mass transfer coefficients for indoor simulation of distillation unit with cooled condensing cover. The condensing cover was cooled externally in the range of 0.5–2.0°C during indoor experiment. A modified thermal model has been used along with other thermal models for wide range (35–85°C) of water temperature to predict the heat and mass transfer coefficients. The experimental yield has been found in better agreement with yield predicted using present thermal model in this study, with least percentage deviation of 10.7%. Further, the yield obtained in present design of distillation unit is about 165% higher than the yield obtained without cooled condensing cover. The evaporative fractional energy has also been increased.

*Keywords:* Indoor simulation; Heat and mass transfer coefficients; Fractional energy

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