

SEPARATION SCIENCE & ENGINEERING

采用增湿-去湿工艺的竖列管式脱盐装置的实验研究

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摘要 A vertical tubular desalination unit with shell and tube structure was built to perform humidification and dehumidification simultaneously on the tube and shell side of the column, respectively. The effects of several operating conditions on the productivity and thermal efficiency of the column were investigated. The results show that both the productivity and thermal efficiency of the column enhance with the elevation of the inlet water temperature. The flow rates of water and carrier gas both have optimal operating ranges, which are 10-30 kg·h⁻¹ and 4-7kg·h⁻¹ for the present column, respectively. Meanwhile, the increase of external steam flow rate will promote the productivity of the column but reduce its thermal efficiency.

关键词 [脱盐作用](#), [湿气](#), [淡水资源](#), [海水](#), [淡化处理](#)

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Experimental Investigation of a Vertical Tubular Desalination Unit Using Humidification Dehumidification Process

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Abstract A vertical tubular desalination unit with shell and tube structure was built to perform humidification and dehumidification simultaneously on the tube and shell side of the column, respectively. The effects of several operating conditions on the productivity and thermal efficiency of the column were investigated. The results show that both the productivity and thermal efficiency of the column enhance with the elevation of the inlet water temperature. The flow rates of water and carrier gas both have optimal operating ranges, which are 10-30 kg·h⁻¹ and 4-7kg·h⁻¹ for the present column, respectively. Meanwhile, the increase of external steam flow rate will promote the productivity of the column but reduce its thermal efficiency.

Key words [desalination](#); [humidification](#); [dehumidification](#)

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