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Effects of operating parameters on permeation flux for desalination of sodium chloride solution using air gap membrane distillation

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ABSTRACT

Desalination of sodium chloride solution has been experimentally investigated by air gap membrane distillation. The effects of process parameters, feed temperature, feed flow rate, feed salts concentration and air gap thickness on the permeation flux have been studied. The flux increases with increasing feed temperature and flow rate. The flux decreases with increasing salt concentration, air gap thickness. Using commercially available PTFE membranes of 0.01382 m^2 area, the maximum permeate flux was 9.4 L/m^2h at 80°C with flow rate of 250 ml/min. The salt rejection was observed nearly 99.9% in the all experimental conditions. The AGMD is an ideal process for application of desalination and also alternative process compare to conventional distillation and reverse osmosis.

Keywords: Desalination; Air gap membrane distillation; Permeation flux; Sodium chloride

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