

Modeling and comparison of direct contact membrane distillation with coolant for desalination

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Membrane distillation(MD) is a way of improving process for RO process. Especially, Direct contact membrane distillation(DCMD) is specialized for desalination process. DCMD is composed feed side (retentate side), distillation side(permeate side) and hydrophobic membrane, and the hydrophobic membrane located between feed and distillation side. Unlike RO process the driving force of DCMD process is the saturated vapor pressure difference induced by the temperature difference. For this reason, increase for temperature difference is important to get the high flux.

In this work, coolant flow is suggested for increasing the temperature difference at the side of permeate side and mathematical model of DCMD with coolant is developed. then using a developed model, the effects of the operating conditions and flow directions are researched.