

## Effect of Inclination Angle on Productivity of a Direct Contact Membrane Distillation (Dcmd) Process

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**Abstract :** A direct contact membrane distillation (DCMD) system was modeled using various angles for the membrane unit and a Reynolds number range of 500 to 2000 in this numerical analysis. The Navier-Stokes, energy, and species transport equations were used to create a two-dimensional model. The finite volume method was used to solve the governing equations (FVM). The results showed that as the Reynolds number grows up to 1500, the heat transfer coefficient increases for all membrane angles except the 60° inclination angle. Additionally, increasing the membrane angle to 90° reduces the exit influence while increasing heat transfer. According to these data, a membrane with a 90° inclination angle (also known as a vertical membrane) and a Reynolds number of 2000 might have the smallest temperature differential. Similarly, decreasing the inclination angle of the membrane keeps the temperature difference constant between Reynolds numbers 1000 and 2000; however, between Reynolds numbers 500 and 1000, the temperature difference decreases dramatically.

**Keywords :** direct contact membrane distillation, membrane inclination angle, heat and mass transfer, reynolds number

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