

Production of drinking water from saline water by direct contact membrane distillation

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To understand the process of the production pure water by seawater desalination with direct contact membrane distillation (DCMD), there type of different depth membrane modules were set up to studied the heat transfer and mass transfer mechanism on membrane distillation process. Nine types of commercially available membranes were used for DCMD system to investigate the effect of membrane difference on the permeation flux and conductivity. Some characterization of membranes such as liquid entry pressure of water (LEPw), scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (EDS), measurement of contact angle (CA) were checked for understand the membrane and DCMD process more comprehensively. The effect of different membranes was discussed under the different operation parameters including temperature difference change, flow rate change, NaCl concentration change. The highest permeate flux was observed for 23.6L/m²hr at the conditions: hot side inlet temperature 60°C, cold side inlet temperature 20°C, NaCl concentration 3.5% for PTFE pore size 0.22μm membranes. And the permeation conductivity was under 7μS/cm.