

Draw Solute Separation and Energy Consumption in Forward Osmosis Desalination

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The feasibility check for draw solute separation process in Forward Osmosis desalination was performed with a Rotary Vacuum Evaporator through a single stage batch experiment. The separation process was then simulated in Aspen Plus chemical process modeling software, to estimate the energy consumption and compare it with other desalination processes, mainly the Reverse Osmosis process which is currently most prevalent. The electrolytic chemistry for the system was retrieved using the Elec - NRTL property method in the Aspen Plus database. Electrical equivalent of energy required in the Forward Osmosis desalination technique was estimated and compared with the prevalent desalination techniques. Also the various techniques to measure the draw solute concentration were experimented and examined to establish a quick, easy and efficient technique to measure the draw solution concentration throughout the process.