

Less Commonly Used Membrane Desalination Technologies – Brian Bolto, Manh Hoang, Thuy Tran
Summary

The literature on membrane distillation and forward osmosis for treating natural and recovered wastewaters is reviewed. There is renewed interest in these membrane technologies as alternatives to pressure driven processes such as reverse osmosis, which are expensive in both capital and energy, and generally require pre-treatment of the feed water. Membrane distillation with hydrophobic microfiltration membranes can make use of low-grade heat energy, and give higher yields of product water from concentrated feed waters. Forward osmosis uses hydrophilic membranes akin to reverse osmosis, and needs a draw solution that is appropriate in the product water, or must be recovered and reused in large-scale operation. Although they show great promise as simple low energy systems, no large-scale installation of either process exists as yet. Membrane distillation has considerable potential for desalination to produce drinking water, whereas FO is currently confined to small-scale systems, especially as a source of energy drinks in emergency situations.