Drink. Water Eng. Sci. Discuss.,
https://doi.org/10.5194/dwes-2020-9-RC2, 2020

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Drinking Water Engineering and Science Discussions

Interactive comment on "Preparation of TFC Membranes Supported with Elelctrospun Nanofibers for Desalination by Forward Osmosis" *by* Mustafa Al-Furaiji et al.

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Received and published: 14 May 2020

So we agree that forward osmosis is a two step process: first a draw solution is used to draw water trough the FO-membrane and secondly the draw solution has to be concentrated and the fresh water can be harvested. This second step will always consume energy: otherwise it would be possible to build a perpetuum mobile based on harvesting energy from mixing saline water with fresh water. Until now the most efficient and most economical way to recover the draw solution is RO. The author mentions some other possibilities like precipitation (uses a lot of chemicals) and heating for NH3-CO2draw solution. The last option is not applicable because it is very hard to

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obtain a very low concentration of NH4+ in the product water and this is mandatory for discharge or even lower concentrations are needed for potable water production. Also there is a problem with dissolving the gasses into the recovered draw solution: A lot of heat is produced when dissolving the gasses. In fact the draw solution should be cooled down before use which will consume a lot of energy. So the biggest problem with FO is that a proper (economical) way to recover the draw solution is not found yet.

Interactive comment on Drink. Water Eng. Sci. Discuss., https://doi.org/10.5194/dwes-2020-9, 2020.