Design of FO/crystallization/RO hybrid process for seawater desalination with various operating conditions

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In this present study, a design of the hybrid FO-crystallization-RO desalination process is performed. The hybrid process has three different configuration depending on the operating conditions and each configuration requires different characteristics of draw solute, respectively. Each draw solute candidate is screened and each configuration is simulated to estimate its energy and cost consumption. The potential of the hybrid process is tested by comparing conventional reverse osmosis process which is the most popular technology in seawater desalination. Operating condition optimization is also performed and optimal conditions of each configuration are obtained. It can be concluded that the hybrid process has sufficient potential to replace conventional RO process.