

ABSTRACT

REVERSE OSMOSIS SYSTEM WITH ENERGY RECOVERY DEVICES

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A reverse osmosis system according to the present disclosure includes a first membrane array, a second membrane array, a hydraulic pressure booster, and a motor-generator. The first membrane array is configured to generate a first permeate stream and a first brine stream from a feed stream. The second
10 membrane array is configured to generate a second permeate stream and a second brine stream from the first brine stream. The booster is configured to use energy from the second brine stream to increase pressure of at least one of the feed stream and the first brine stream. The motor-generator is coupled to the hydraulic pressure booster and is operable to use energy from a power
15 supply to drive the hydraulic pressure booster. The motor-generator is also operable to use energy from the second brine stream to provide power to the power supply.

Fig. 5

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