

LOW ENERGY SYSTEM AND METHOD OF DESALINATING SEAWATER

ABSTRACT

A low energy water treatment system and method is provided. The system has at least one electrodialysis device that produces partially treated water and a brine byproduct, a softener, and at least one electrodeionization device. The partially treated water stream can be softened by the softener to reduce the likelihood of scale formation and to reduce energy consumption in the electrodeionization device, which produces water having target properties. At least a portion of the energy used by the electrodeionization device can be generated by concentration differences between the brine and seawater streams introduced into compartments thereof. The brine stream can also be used to regenerate the softener.

Fig. 3