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Different approaches on energy optimization in reverse osmosis desalination plant

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Abstract
Clean water and energy are two major of concerns in today world and it becomes more significant due to the climate change and population growth. Membrane-based desalination has became a very common method to provide water, but the cost of water production should be affordable. Energy is the main cost component in desalination economics. The more energy consumption, the more water production cost. Therefore, producing water with low cost and without using conventional fossil fuel is of great importance. In this paper, approaches to minimize energy consumption in reverse osmosis desalination is presented. These approaches include design and configuration of plant, energy recovery device tools and new hybrid technologies like forward osmosis and pressure retarded osmosis. Utilizing energy recovery devices and design of system have shown to be effective in order to decrease energy usage and consequently final cost of water. Although applying hybrid methods need more investigation especially in inland area which is far from ocean or sea water, they seem promising.

Biography
Leili Abkar is graduate student in the department of chemical engineering-NMSU. She graduated from school of chemical engineering-Iran University of Science and Technology at master level and her bachelor degree is from Amirkabir University of Technology (Tehran Polytechnic). Also, she worked as R & D employee in the field of desalination for 3 years. Meanwhile she became familiar with different method of desalinations. Currently, she is working as research assistant with the Institute for Energy & the Environment under supervision of professor Ghassemi on water desalination processes integrated with renewable energy.