Thermal desalination in GCC and possible development

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ABSTRACT

The Water Desalination and Reuse Center in King Abdullah University of Science and Technology, in Saudi Arabia, held a workshop on thermal desalination on the 11th and 12th of March, 2013. This paper was presented as part of a lecture at the workshop. It presents the status and possible developments of the two main thermal desalination systems processing large quantities of seawater in the Gulf Cooperation Council, multi-stage flash, and thermal vapor compression systems. Developments of these systems were presented to show how these systems are competing with the more energy-efficient seawater reverse osmosis desalting.

Keywords: Multi-stage flash desalting systems; Desalination; Multi-effect; Thermal vapor compression; Falling film evaporators; Top brine temperature; Pumping energy; Gain ratio; Performance ratio; Equivalent work; Feed salinity; Brine salinity