

Integration of Multi Effect Desalination with Solid Oxide Fuel Cell/Gas Turbine Power Cycle

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Abstract : One of the most favorable thermal desalination methods used widely today is Multi Effect Desalination. High energy consumption in this method causes coupling it with high temperature power cycle like gas turbine. This combination leads to higher energy efficiency. One of the high temperature power systems which have cogeneration opportunities is Solid Oxide Fuel Cell / Gas Turbine. Integration of Multi Effect Desalination with Solid Oxide Fuel Cell /Gas Turbine power cycle in a range of 300-1000 kW is considered in this article. The exhausted heat of Solid Oxide Fuel Cell /Gas Turbine power cycle is used in Heat Recovery Steam Generator to produce needed motive steam for Desalination unit. Thermodynamic simulation and parametric studies of proposed system are carried out to investigate the system performance.

Keywords : solid oxide fuel cell, thermodynamic simulation, multi effect desalination, gas turbine hybrid cycle

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