

## عنوان مقاله:

A Study of SOFC-KC-TEG-RO hybrid system, producing power and fresh water

## محل انتشار:

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## خلاصه مقاله:

Optimization of a multi generation system producing power and freshwater is proposed in this study which is based on solid oxide fuel cell. In this system, SOFC stack and a new KC-TEG configuration were used for recovery of the waste heat and the energy required for RO desalination can be supplied by Kalina cycle and thermoelectric generator in which methane is used as its major fuel. Thermodynamic equations and exergy-economic relations were solved for different components of the system. Exergy analysis results indicated that stack SOFC has the highest contribution in total exergy destruction of the system. To obtain maximum efficiency and minimum cost, optimization was carried out using genetic algorithm. The total optimum point of the system is the trade-off between the optimization objectives. At this point, the net power production is about 1.2 MW and the amount of freshwater reaches to 230 m<sup>3</sup>/day. Exergy efficiency and total cost rate are also 54% and 36.8 \$/hr, respectively.

## کلمات کلیدی:

Solid oxide fuel cell, Kalina cycle, Multi-objective optimization, exergy-economic analysis

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/924758>

