

## عنوان مقاله:

Numerical simulation of a triple production system with a solid oxide fuel cell

## محل انتشار:

دومین کنگره بین المللی علوم و مهندسی (سال: 1397)

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## خلاصه مقاله:

The use of desecrated electricity and heat generation systems has the advantage. One can reduce the costs associated with power transmission equipment, reduce power losses during power transmission, installation time and low utilization, ease of recycle of waste heat, reduce environmental pollution, low investment costs, sales opportunities The production of surplus to the national grid, realization of real privatization by converting large investors to micro-investors, the use of renewable energy sources, etc. An arrangement of a combined cooling, heating and power (CCHP) system with PEM fuel cell as a prime mover has been introduced in this paper and a parametric analysis based on energy and exergy laws has been done to evaluate efficiencies of the system. This CCHP system consists of a PEM fuel cell, hydrogen and heat storage tanks, and an absorption chiller. In addition, the electrochemical model of PEM fuel cell has been performed and absorption chiller and heat storage tank have been analyzed. Also the system has been compared with the conventional energy systems for residential applications and FESR of the CCHP system has been studied. In addition the effects of current density, size of the PEM fuel cell and y Factor have been discussed on energy and exergy performances and FESR. The main results of this paper can be written as: Energy and exergy efficiencies and FESR of the proposed system are 615558, 545558 and 458, respectively and as it can be seen this novel arrangement of PEM fuel cell, absorption chiller and heat storage tank .has a high efficiency and it can be recommend to using

## کلمات کلیدی:

Triple production system, Solid oxide fuel cell, Electricity, heating and cooling production simultaneously

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