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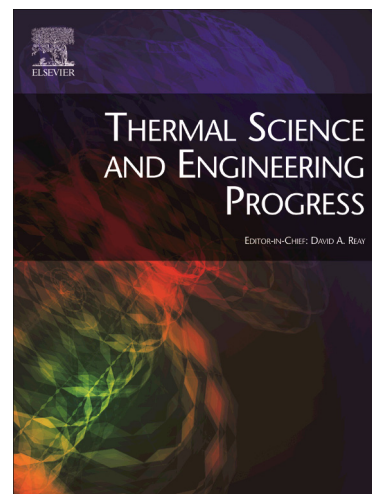
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A comprehensive comparison among different types of geothermal plants from exergy and thermoeconomic points of view

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Abstract

In present study, some chosen cycles of the geothermal power plant, such as dry steam cycle, single, double and triple flash cycles and different configurations of the organic Rankine cycle have been investigated and compared with each other using energy, exergy and thermoeconomic analyses. Effective parameters on efficiency and exergy destruction, such as flash pressure in flash cycles and extraction steam pressure in organic Rankine cycles have been optimized and the optimized conditions have been used for economic analyses. Results of the thermodynamic analysis show that the dry steam cycle has the maximum energy and exergy efficiency among all the considered systems in current study. Furthermore, the results show that the power capacity in double flash cycle is 27.7% higher than that in single flash cycle and also the triple flash cycle generates 10% more power than the double flash cycle. Despite of the acceptable performance of the triple flash cycle from thermodynamic point of view, the obtained results from thermoeconomic analysis indicates that using this system is not cost effective. Moreover, when a same value for geofluid inlet exergy is considered for all the systems mentioned in present work, the results of analysis

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