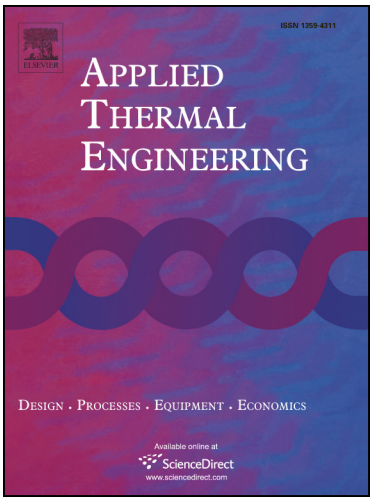

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PII: S1359-4311(17)36488-8
DOI: https://doi.org/10.1016/j.applthermaleng.2018.06.070
Reference: ATE 12341

To appear in: *Applied Thermal Engineering*

Received Date: 28 November 2017
Revised Date: 21 June 2018
Accepted Date: 22 June 2018

Please cite this article as: P. Guo, L. Zheng, X. Sun, M. He, Y. Wang, J. Shang, Sustainability evaluation model of geothermal resources in abandoned coal mine, *Applied Thermal Engineering* (2018), doi: https://doi.org/10.1016/j.applthermaleng.2018.06.070

Sustainability evaluation model of geothermal resources in abandoned coal mine

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ABSTRACT： The evaluation of geothermal resource is important for abandoned coal mine reservoir. In this paper, we assessed the geothermal potential of abandoned coal mines using numerical model with key parameters calculated by empirical formula. The volume and spatial distribution of fractures were calculated based on the volume of open space in the abandon mine and strength of roof rock; a 3D model was developed using the MINC method of TOUGH2 simulator. Calculation results show that the geothermal potential of abandoned mine reservoirs depends on not only the permeability of fracture but also the height of fractured zone. Because of the height of fractured zone, the abandoned mine with the strong roof has more geothermal potential than in other cases. Furthermore, sensitivity analyses of key parameters model results indicated that the heat extraction rate is closely related to not only the flow rate but also the injection temperature and lifetime.

Keywords： Geothermal energy; Abandoned mine; Stope; Sustainability

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