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Geothermal recovery of abandoned oil wells: The effect of insulation on the efficiency of coaxial borehole heat exchangers

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Using abandoned oil and gas wells as coaxial borehole heat exchangers paves the way for reusing these wells for geothermal energy extraction and low-carbon electricity generation. In this study, 150 different scenarios of such energy extraction processes have been modelled to examine the impact of inner tube's insulation on the output energy. It is shown that, on average, the performance coefficient of the exchanger is 3 times higher with the use of effective insulation. The results of this research lead to more effective use of abandoned wells and increased economic and energy efficiency of these systems.

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Primary authors: Mr AHMADPOOR, Yasin (Institute of Petroleum Engineering, School of Chemical Engineering, College of Engineering, University of Tehran); Dr SAJJADI, Mozhdeh (Assistant Professor); Dr EMAMI NIRI, Mohammad (Institute of Petroleum Engineering, School of Chemical Engineering, College of Engineering, University of Tehran)

Presenters: Mr AHMADPOOR, Yasin (Institute of Petroleum Engineering, School of Chemical Engineering, College of Engineering, University of Tehran); Dr SAJJADI, Mozhdeh (Assistant Professor)

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