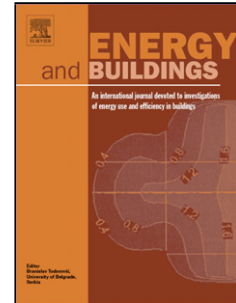


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# Geothermal Cooling/Heating Using Ground Heat Exchanger for Various Experimental and Analytical Studies: Comprehensive Review

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## Research Highlights

- The need of EATHE performance enhancement in Western Himalayan region.
- Effect of different design parameters on the performance enhancement of earth air heat exchanger.
- Effect of soil composition on various models by previous researchers.
- Effect of design guidelines on the EATHE performance.

## Abstract:

Geothermal energy is one of the renewable energy sources that we have an easy access to for supplying low-grade thermal energy with a low impact on the environment. It is an abundant energy source that can be easily accessed for space heating and cooling purposes. This is the property of the earth that at a certain depth the temperature of earth is almost constant throughout the year. This constant temperature remains lower as compared to earth's surface temperature during summers and vice-versa. Ground heat exchanger (GHE) consists of a long underground metallic, plastic or concrete pipes buried at certain depth through which air is drawn. As the air travels through the pipes, it gives up or receives some of its heat from the surrounding soil and enters the room as conditioned air during heating and cooling periods. Using earth air tunnel heat exchange, indoor thermal comfort can be achieved for a building

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