

Geothermal Heat Pumps

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Abstract (summary)

Geothermal heat pumps can be considered a sustainable technology, as they reclaim and recycle thermal energy from the earth. In climates with a near balance in the annual heating and cooling loads, they function essentially as a seasonal energy storage scheme. This paper presents an overview of the technology. The various types of geothermal heat pumps are explained along with their relative merits. Detailed discussion is included on the most common method of ground coupling for commercial scale applications, the vertical borehole heat exchanger. Issues with sizing the heat exchanger and grouting it are discussed, as well as the motivation for in situ thermal properties testing. In-building equipment, including the heat pumps themselves, is briefly described. Experience with geothermal heat pumps to date is presented for both residential and commercial scale applications. Regional market penetration and competitiveness are also discussed for both residential and commercial scale applications. The paper concludes that the overall outlook for expanded application of geothermal heat pumps is very favorable.

Indexing (details)

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Title

Geothermal Heat Pumps

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