

Energy System for Algerian Green Building in Tlemcen, North Africa

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Abstract : This article highlights a method for natural heating and cooling of systems in areas of moderate climate. Movement of air is generated inside a space by an underground piping system. In this paper, we discuss a feasibility study in Algeria of air-conditioning using a ground source heat pump (GSHP) with vertical mounting, coupled with a solar collector. This study consists of modeling ground temperature at different depths, for a clay soil in the city of Tlemcen. Our model is developed from the non-stationary heat equation for a homogeneous medium and takes into consideration the soil thermal diffusivity. It uses the daily ambient temperature during a typical year for the locality of Tlemcen. The study shows the feasibility of using a heating/cooling GSHP in the town of Tlemcen for the particular soil type; and indicates that the duration of air flow in the borehole has a major influence on the outgoing temperature drilling.

Keywords : green building, heat pump, insulation, climate change

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