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EARTH TUBE HEAT EXCHANGER (ETHE)

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Abstract

Earth tube heat exchanger systems can be used to cool the building in summer climate and heat the buildings in winter climate. In a developing country e.g. India, there is a huge difference in demand and supply of electricity and rising electricity prices have forced us to look for cheaper and cleaner alternative. Our objective can be met by the use of earth tube heat exchangers and the system is very simple which works by moving the heat from the house into the earth during hot weather and cold weather. Measurements show that the ground temperature below a certain depth remains relatively constant during the year.

Keywords *- EUT, ETHE, Earth Tube, Air.*

1.Introduction

Saving energy is one of the most important global challenges. A large portion of the global energy supply is used for electricity generation and space heating, having the major portion derived from fossil fuels. It is nonrenewable resources and their combustion is harmful to the surroundings, during the manufacture of greenhouse gases, which effects the climate change and additional pollutants. Fossil fuel exhaustion along with pollutant emissions and global warming are important factors for sustainable and environmentally benign energy systems. These concerns have motivated efforts to reduce society's dependence on nonrenewable assets, by dipping demand and substituting choice energy sources. First of all efforts are focused on producing electricity with higher efficiency.

ETHE can be used for providing a clean way in heating and cooling to the residential and commercial buildings. Normally using this source of energy is considered a renewable energy which is stored in the ground, being most efficient. ETHE is suitable for various types of buildings and environmentally impacts many projects. Heat collecting pipes in a loop, which pass air in tubes, are used for extracting stored energy from the ground. Hence to provide heating or cooling to the space, the simplicity, low operation and maintenance cost are the main advantages of this type of the system as well as it is environmentally friendly

The main idea of passing air through underground chambers or tubes to obtain a heating effect could be a pretty proposal. Up to date there are hundreds of systems which were constructed. In fact, the climates of the different locations are different and also the soil properties vary from one location to another. Therefore, practically it is imperfect to use the same design for different locations, because each location has particular specifications. Heating tubes are long and buried underground. Air is drawn in plastic pipes or different metal pipes. The good proposal for achieving heat from surrounding soil which can be done by the air routes through the pipes entering to the zone as a source of heating or cooling air. This will be available only if the soil soundings under the earth are by several degrees warmer than the ambient inlet air. In summer, if there is a suitable thermal design of the system, in the buildings the mechanical and air-conditioning units can be reduced in the capacity which leads to reduce the energy